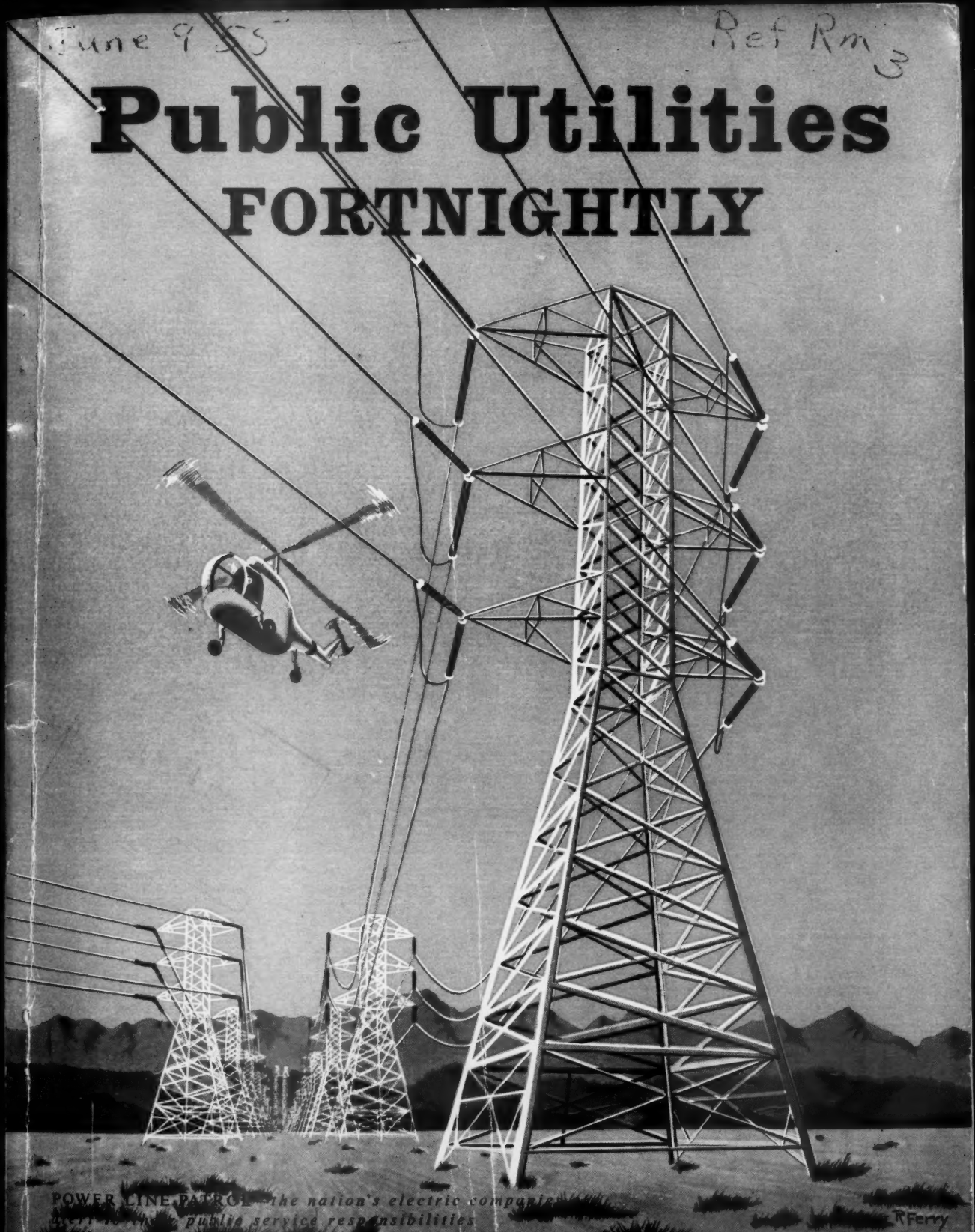
June 9 '55 — Ref Rm 3

Public Utilities FORTNIGHTLY



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R Ferry

Feature articles on the new regulatory climate, federal policies, and the atomic frontier

JUNE 9, 1955

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Subscriptions: Address correspondence to PUBLIC UTILITIES FORTNIGHTLY, circulation department, Munsey Building, Washington 4, D. C. Allow one month for change of address.

Single copies $1.00. Annual subscription price (26 issues a year): United States and possessions, $15.00; Pan American countries, $15.00; Canada, $16.00; all other countries, $17.50.

Entered as second-class matter April 29, 1915, under the Act of March 3, 1879, at the Post Office at Baltimore, Md., December 31, 1936. Copyrighted, 1955, by Public Utilities Reports, Inc. Printed in U. S. A.

Public Utilities FORTNIGHTLY

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Progress toward large-scale use of atomic energy took a giant forward step with Consolidated Edison Company's decision to build a nuclear steam-electric generating plant at Indian Point, N.Y. The first privately financed atomic plant in history, Con Edison's 250,000 kw station will rank with the largest conventional fuel plants now being built.

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In selecting Babcock & Wilcox — an experienced supplier of steam generating equipment — to design, fabricate and erect the nuclear steam generator for the Indian Point plant, Con Edison recognized that a large share of the skills involved in nuclear power concern heat transfer, steam generation, fluid flow, high pressure piping, metallurgy, welding, and similar fields — in all of which B&W is a recognized leader.

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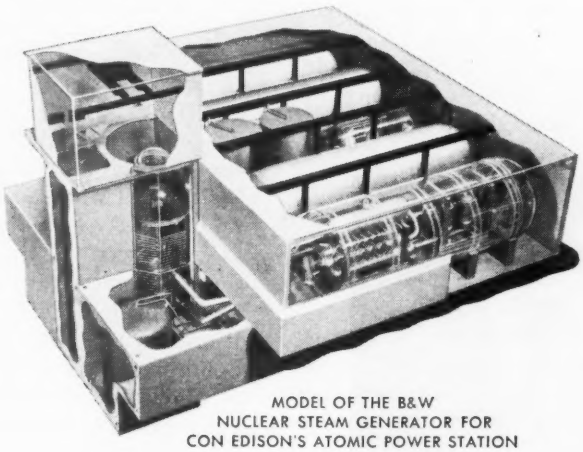

MODEL OF THE B&W
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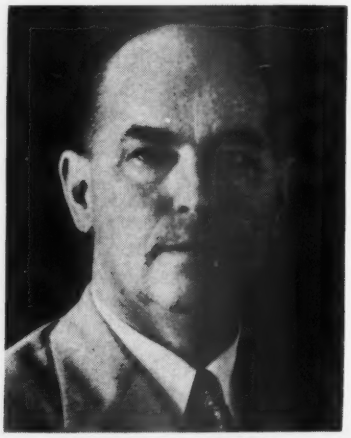
Pages with the Editors

As this issue is being distributed, members and guests of the Edison Electric Institute gather for their twenty-third annual convention at Los Angeles, California. Following our custom of recent years, we have endeavored to make this issue of special interest to our readers of the operating electric utility group. We present as an opening feature in this issue a message especially prepared for this publication by the president of the Edison Electric Institute, HAROLD QUINTON. MR. QUINTON'S article stresses the importance of the work and responsibility of the electric industry from the standpoint of humanity, and the progress being made in fulfilling the industry's rôle in achieving its goal of service to the masses.

HAROLD QUINTON, who is also president of the Southern California Edison Company, is a native of Topeka, Kansas. He attended Northwestern University and saw service with the U. S. Cavalry and Field Artillery in World War I. He was with the U. S. Treasury Department in Washington, D. C., from 1920 to 1925. He joined the accounting firm of Arthur Andersen & Co., of which he eventually became a partner in 1928. He was made vice president in charge of finance of Southern California Edison in 1942 and gained his present post with that organization last year.



HERBERT D. VOGEL

HAROLD QUINTON

* * * *

WE are happy to present in this issue an article which should be of special interest not only to our readers in the electric utility industry, but in regulatory and other utility circles as well. It is the article on TVA allocations by the chairman of the Tennessee Valley Authority, BRIGADIER GENERAL HERBERT D. VOGEL, USA (Ret). A graduate of the University of Michigan School of Engineering (CE, '32) and the U. S. Military Academy (BS, '35), GENERAL VOGEL also has degrees from the University of California (MS, '28) and Berlin Technical University (Dr. Ing., '29). His career as an officer of the Army Engineers Corps embraces all ranks from Second Lieutenant to Brigadier General. During World War II he saw service in the Southwest Pacific (Australia, New Guinea, Philippines, Japan (Legion of Merit; Distinguished Service Medal). Last year he was appointed to the TVA.

* * * *

A NOTEWORTHY feature in this issue (beginning page 668) is the model law for atomic energy regulation which a number of state legislatures are considering

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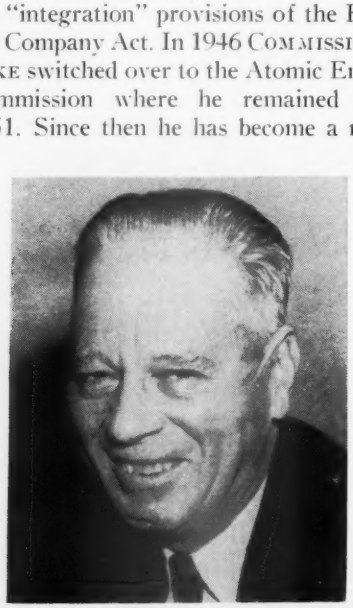
this year, and will probably consider in the years ahead. The draft of the model bill, which appears in full text in this article, was prepared, with commentary, by Professor David F. Cavers, associate dean of the law school of Harvard University, for a legislative subcommittee of the Committee on Atomic Energy, organized by the Conference of New England Governors. Professor Cavers tells us he was assisted in this work by Professor William W. A. Krebs, Jr., who teaches law in the Sloan School of Industrial Management at the Massachusetts Institute of Technology. Professor Krebs is the executive secretary of the New England Committee on Atomic Energy.

THE author of the article describing this model law and its importance is one who should actually need little introduction to the readers of this publication. SUMNER T. PIKE has undoubtedly established some kind of a record by virtue of his membership on three different commissions (two federal). He originally worked for the utility management group of Stone & Webster at their home office in Boston, and elsewhere. He was also an adviser on utility securities for a group of fire insurance companies. In 1940 he was named to the Securities and Exchange Commission which was then engaged in administering the "integration" provisions of the Holding Company Act. In 1946 COMMISSIONER PIKE switched over to the Atomic Energy Commission where he remained until 1951. Since then he has become a member and chairman of the Maine Public Utilities Commission—his present post.



SUMNER T. PIKE

HAROLD H. YOUNG

* * * *

HAROLD H. YOUNG, whose article on the utility "interests" begins on page 678, is a partner of Eastman, Dillon & Co., the well-known New York investment firm specializing in utility securities. A native of Laconia, New Hampshire, he graduated from Brown University (Master of Business Administration, '25) and following some early investment experience in Providence, Rhode Island, came to New York in 1943 to enter the employ of Eastman, Dillon & Co. He is a regular contributor to *Investment Dealers' Digest* and has for a number of years lectured at the New York Institute of Finance on utility developments.

* * * *

JANE ESHLEMAN CONANT, whose article on the Trinity river "partnership" project begins on page 685, is a member of the San Francisco *Call Bulletin* editorial staff. She is a graduate of the University of California and a daughter of the late California Lieutenant Governor John M. Eshleman, who at one time was the president of the old California Railroad Commission.

THE next number of this magazine will out June 23rd.

The Editors

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AN ECONOMIC APPRAISAL OF THE PRIVATE ELECTRIC UTILITY INDUSTRY

Despite the reluctance of some regulatory authorities, backed by statutory restrictions and judicial precedent, to consider any departure from original cost concepts, the inflationary ghost will not stay buried in the field of public utility regulation. C. P. Guercken, assistant to vice president, Ebasco Services Incorporated, has made an impressive survey of various economic indicia which indicate that continued adherence to original cost concepts has produced an end result which is unrealistic in the light of actual price and earnings developments. The suggested remedy, to bring the regulatory components in the rate-fixing process into proper balance, is estimated at the trifling cost of about five cents a day per customer. Refusal or postponement of such a correction, on the other hand, can lead to more serious dislocation when the final day of reckoning arrives.

REACTOR INSURANCE RISKS STILL UNSOLVED

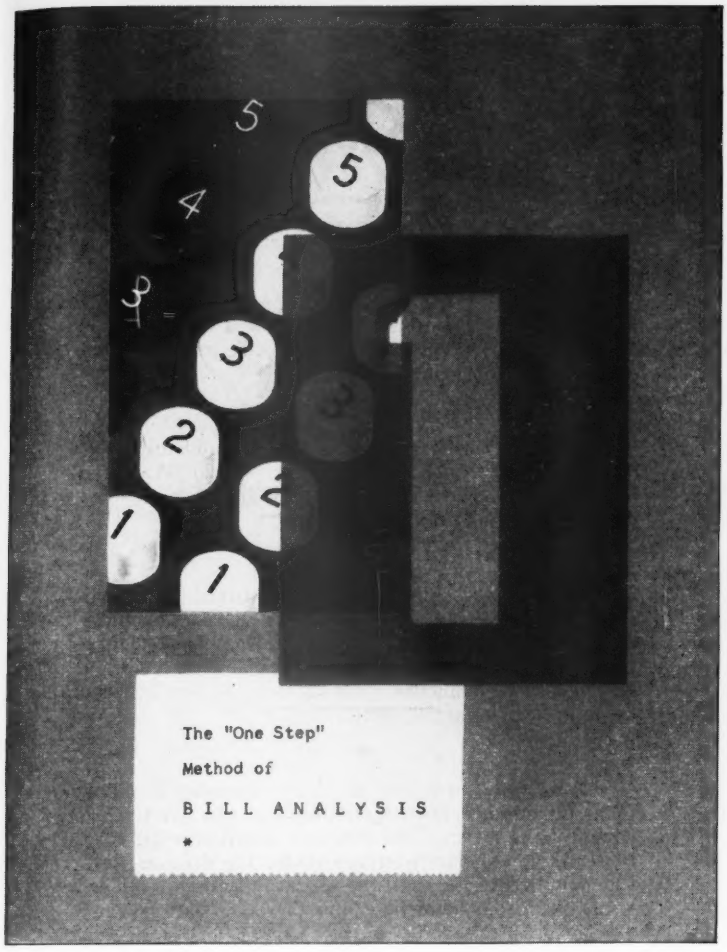
Atomic development for peacetime purposes already has run into a number of stubborn problems which have nothing to do, **per se,** with the technical aspects. It will probably run into more of them before the first atomic fuel electric power goes on the line for service to the general public. One of these problems furnishes quite a contrast with the sensational, almost miraculous, engineering accomplishments of turning uranium ore into invisible torrents of electric energy. This is the staid but exacting requirement of adequate insurance coverage. Public service facilities of all kinds must be adequately insured against all reasonable and foreseeable risks so as to protect the public in a continuity of service. Herbert Bratter, author of business articles, has examined the various factors which make the question of insuring the atomic power risk so vexing.

CINCINNATI TRANSIT BEATS AUTOS WITH "CLUBS"

All those in the transit industry and most of us outside of it should be interested in the experiments being conducted in so-called "club riding" in Cincinnati. Regulatory commissions, as well as transit company operators, investors, and passengers, have considered many ways of trying to induce people to ride buses instead of driving their own cars, particularly when the current high volume of customer spending makes the cost feature such an important factor. George W. Keith, Cincinnati author, gives us an entertaining account of the genesis, organization, and performance of the so-called transit "clubs."

★

Also . . . ***Special financial news, digests, and interpretations of court and commission decisions, general news happenings, reviews, Washington gossip, and other features of interest to public utility regulators, companies, executives, financial experts, employees, investors, and others.***



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Economist and executive director, Research Institute of America.

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FRANK W. KLINGBERG
Columnist, Los Angeles Times.

"Historically no nation has ever succeeded in piling up mountainous debts without ultimate ruin. Even more dangerous is the fact that runaway inflation is the road to serfdom. Socialism creeps under the door as governmental tinkering with the economy leads to vain attempts to patch holes here and there by state edicts."

HAROLD QUINTON
President, Southern California Edison Company.

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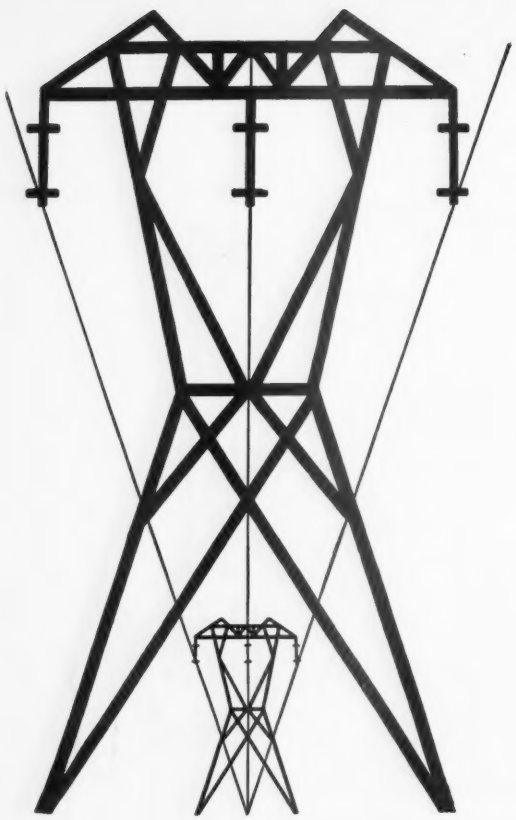

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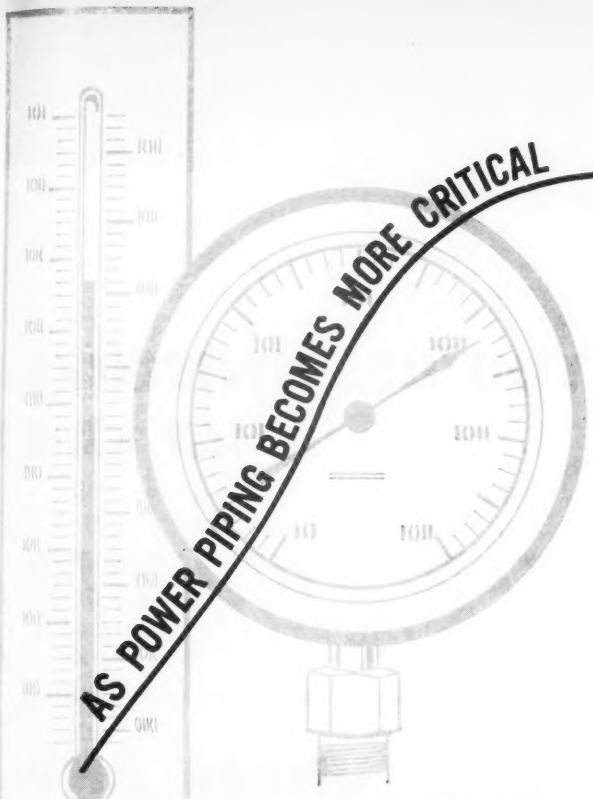

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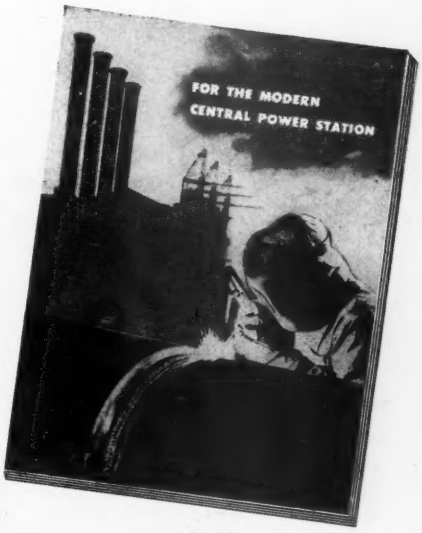

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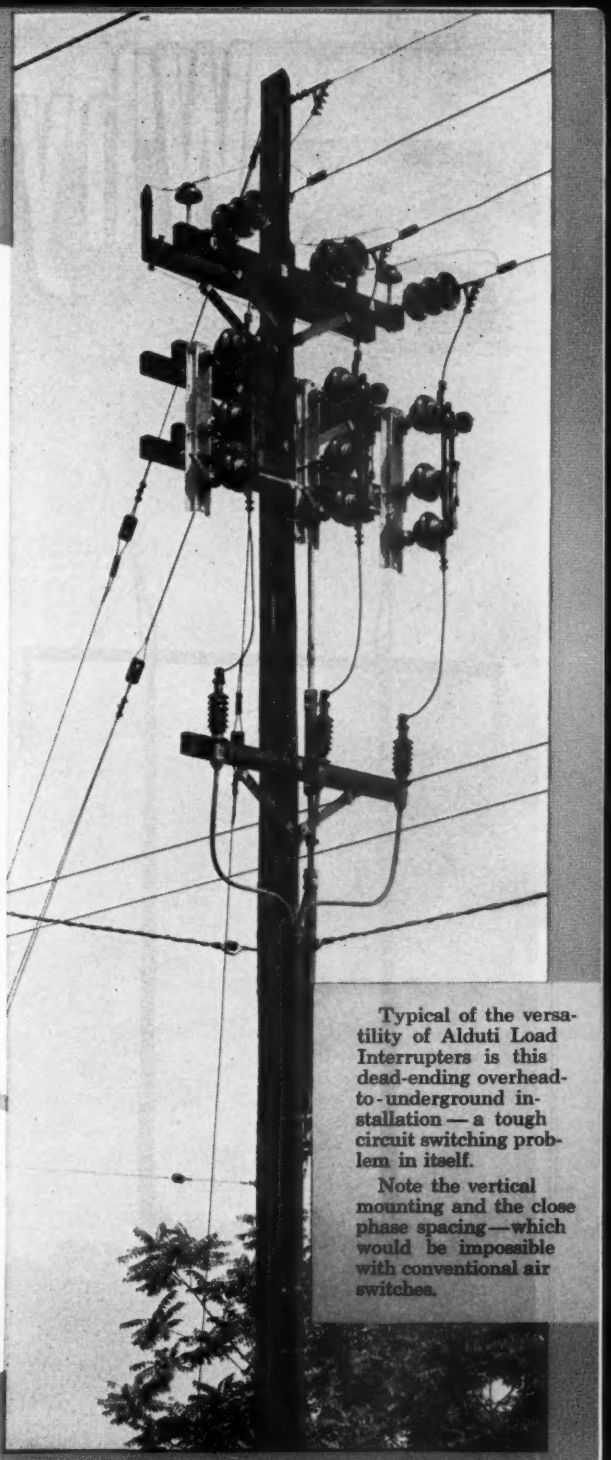
Interested? Then write today for literature. It will give you new ideas on sectionalizing.



Typical of the versatility of Alduti Load Interrupters is this dead-ending overhead-to-underground installation — a tough circuit switching problem in itself.

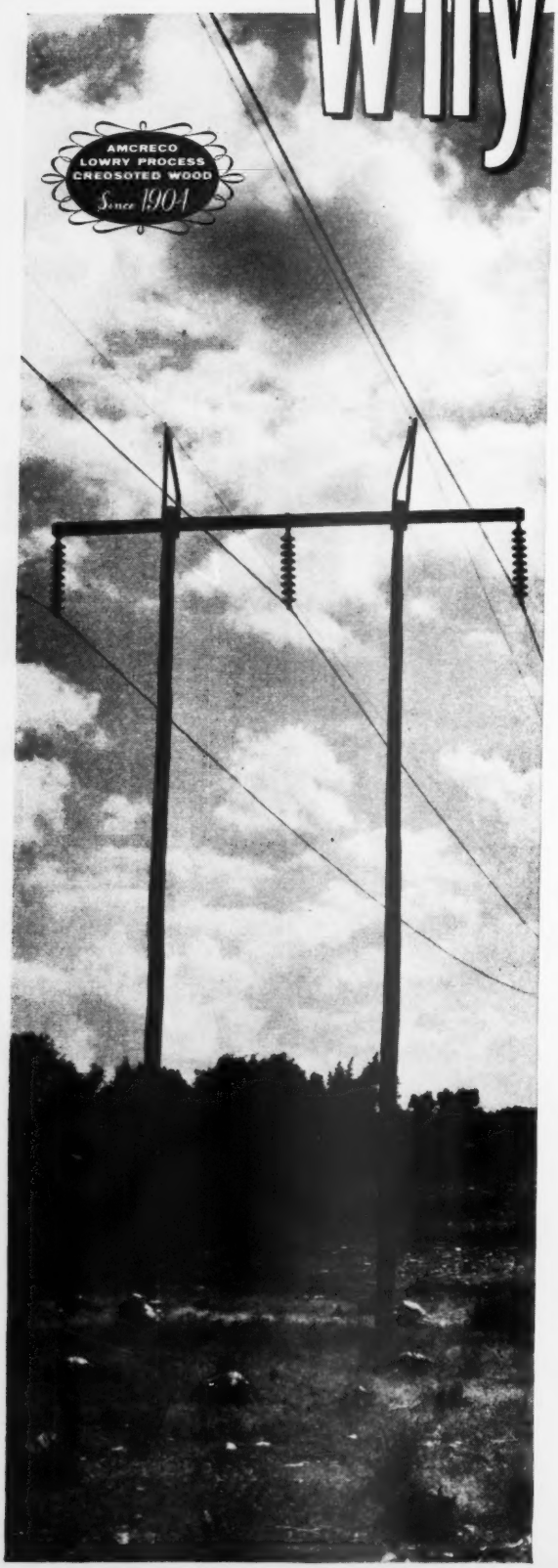
Note the vertical mounting and the close phase spacing—which would be impossible with conventional air switches.

ELECTRIC COMPANY

4440 RAVENSWOOD AVENUE
CHICAGO 40, ILLINOIS, U. S. A.
formerly Schweitzer & Conrad, Inc.

IN CANADA, S&C ELECTRIC CANADA, LTD.
8 VANSCO ROAD, TORONTO 14, ONTARIO

HIGH-VOLTAGE CIRCUIT INTERRUPTION



Why do you invest money in treated woods?

The basic reason why you invest money in treated poles, cross arms, conduit and other construction woods is because they last longer. You know that every dollar spent on properly treated wood products will save you many, many dollars later on in pole renewals, cross arm replacement and other repair and maintenance work.

The first question that you must ask yourself when investing in treated woods is, "Just how much will this particular preservative or process increase the service life of our wood?"

With Amcreco Creosoted Products, that question has been answered. Wood, pressure treated with creosote by Amcreco, lasts for years and years with great strength throughout the life of the wood, and with high resistance to fungi, borers, insects and all natural enemies of wood.

Write our nearest office for estimates or quotations on treated poles, cross arms, conduit, timbers and other construction woods. We would appreciate an opportunity to quote on your needs.

AMERICAN CREOSOTING COMPANY

INCORPORATED

Shreveport Creosoting Company
Colonial Creosoting Company
Federal Creosoting Company
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AMCRECO
LOWRY PROCESS
CREOSOTED WOOD

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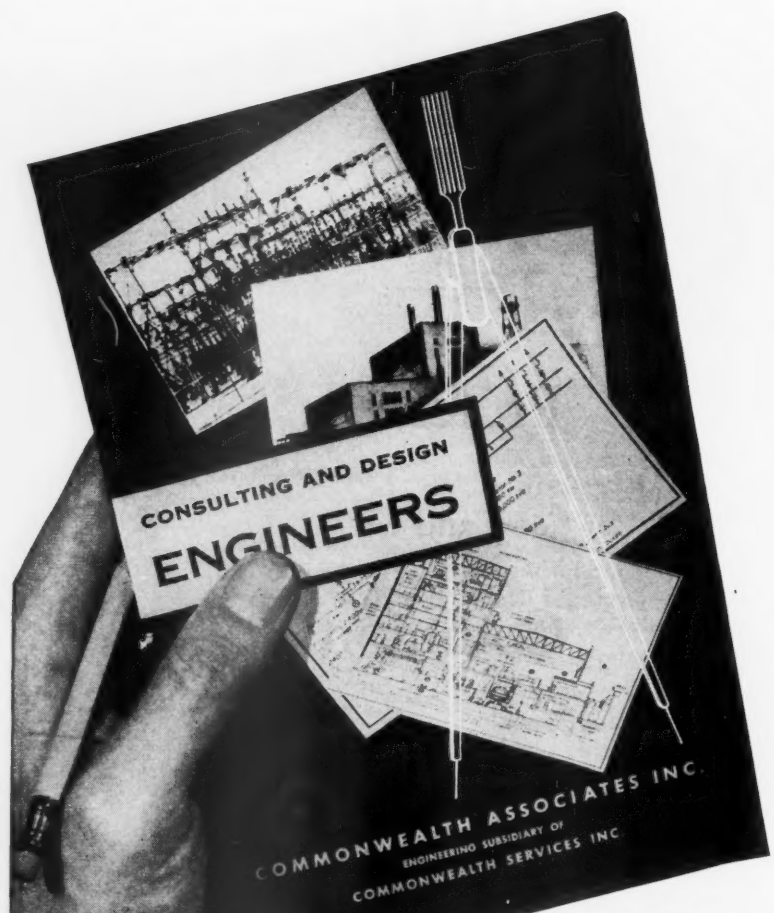

At your request

we will be pleased to send this new, illustrated booklet describing our consulting and design engineering services.

Write Department E
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Commonwealth Services Inc.

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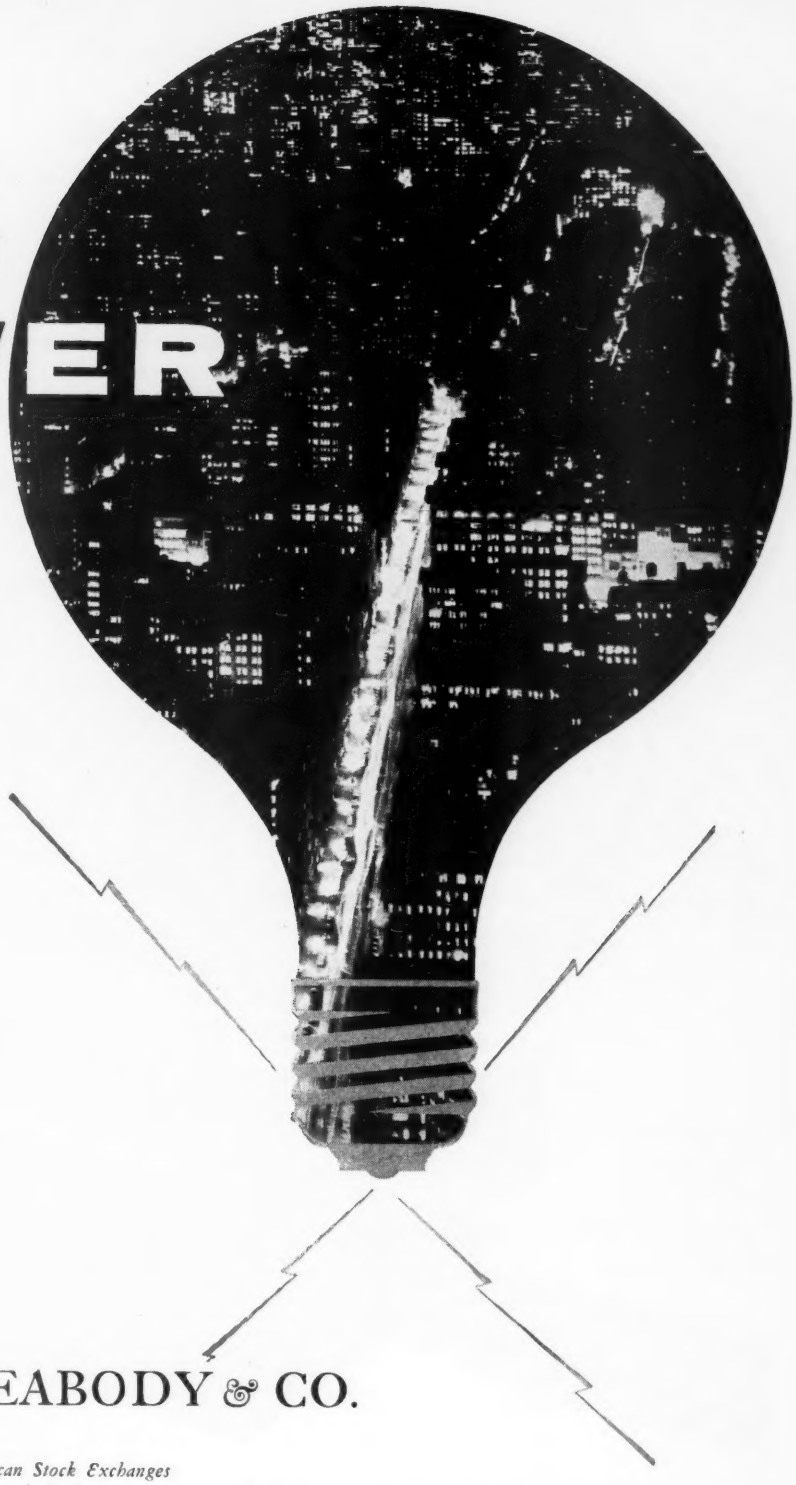
Jackson, Michigan *Washington, D.C.*

. . . *because you wanted* POWER



In 1954, Kidder, Peabody & Co. helped supply more than $1,320,000,000 to the growing Public Utility industry through the underwriting and sale of 95 new utility issues. Of these, 46 were managed, co-managed or placed privately by Kidder, Peabody & Co.

To provide the proper security for each corporation—at the lowest cost for capital—Kidder, Peabody maintains a highly trained Research Staff which is continually evaluating individual company needs and the market for their securities. In addition, a complete selling organization helps assure the most efficient distribution of securities possible.

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BOSTON CHICAGO PHILADELPHIA SAN FRANCISCO

How to meet utility load growth the easy way

By installing Electro-Mobile Power right at any new point of need, you will—

1. Escape new high-line cost entirely.
2. Postpone—or avoid—expensive additional generating station capacity.
3. Be paying no fixed charges for surplus capacity.
4. Have minimum line loss.

Rail car, truck trailer and portable units—350 to 1,000 kw.

Write for simple formula explaining investment advantages of Electro-Mobile Power to:

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS • LA GRANGE, ILLINOIS

Sold and serviced directly through a manufacturer's organization. Electro-Motive Division offices located in: New York City, Chicago, Jacksonville, St. Louis and San Francisco.

In Canada: **GENERAL MOTORS DIESEL, LTD., London, Ontario**

The 1954 annual report of The Dayton Power and Light Company once again records new highs in every phase of the company's operation. West-Central area of Ohio has completed another year of record-breaking new home construction. In addition, the restrictions on the use of natural gas for space heating were lifted. And DP&L put on some of its most successful promotion efforts.

DP&L serves an area where business is on its toes . . . well-paid employees are buying new homes, and the individual use of our services is well above the national average.

This company has been in the fortunate position to take advantage of these opportunities. We are confident that in 1955 this prosperous and progressive area will continue to increase the demand for our services.

We've condensed our 1954 annual report into a "capsule" shown in the chart on the right. We would like to send you a copy of the full report. Just write—

THE DAYTON POWER AND LIGHT COMPANY

BALANCE SHEET

	December 31	
ASSETS	**1954**	**1953***
Property and plant	$193,188,000	$184,096,000
Current assets	22,739,000	14,449,000
Other assets	570,000	1,278,000
	$216,497,000	$199,823,000
LIABILITIES		
Capitalization	$166,397,000	$149,232,000
Current liabilities	15,161,000	18,845,000
Reserves	34,939,000	31,746,000
	$216,497,000	$199,823,000

RESULTS OF OPERATIONS

	1954	1953*
REVENUE	$ 61,547,000	$ 57,501,000
EXPENSES	50,915,000	47,523,000
Gross income	$ 10,632,000	$ 9,978,000
INCOME DEDUCTIONS	2,193,000	1,828,000
	$ 8,439,000	$ 8,150,000
PREFERRED DIVIDENDS	949,000	949,000
Earnings on common stock	$ 7,490,000	$ 7,201,000
Number of common shares outstanding at December 31	2,600,059	2,585,728
Earnings per common share outstanding	$2.88	2.78*

*Restated to include settlement of purchased gas rate increases and federal income taxes

THE DAYTON POWER AND LIGHT COMPANY

25 North Main Street • Dayton 1, Ohio

FRIENDLY, HELPFUL SERVICE *on any* POWER CONNECTOR *problem*

25 YEARS OF LEADERSHIP IN THE ENGINEERING AND MANUFACTURING OF A COMPLETE LINE OF TOP QUALITY PRODUCTS FOR THE ELECTRICAL POWER INDUSTRY.

ANDERSON aluminum and bronze power connectors, clamps, fittings and accessories will *meet and surpass* all your tests for strength, durability, transmission efficiency and long, trouble-free service. The practice of selecting only the finest of materials, and developing them into superior products through exacting engineering and practical, imaginative design has always been our standard. This, plus our modern facilities for manufacture and rigid control of quality from ingot to finished product, is your assurance of successful, long-life installations.

Our sales, engineering and manufacturing facilities are ready to work with you on any problem . . . or any requirement.

Contact one of our nearby representatives or

ANDERSON BRASS WORKS, INC.
P. O. DRAWER 2151 • BIRMINGHAM 1, ALABAMA

Aluminum & Bronze POWER CONNECTORS • CLAMPS • FITTINGS • ACCESSORIES for SUBSTATION • TRANSMISSION • DISTRIBUTION SYSTEMS *for over a Quarter Century*

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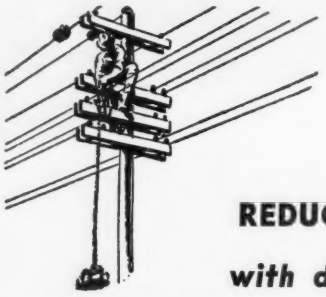
ENGINEERS AND CONSULTANTS

Design and Supervision of Construction

Reports — Examinations — Appraisals

Machine Design — Technical Publications

BOSTON NEW YORK



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"Waterproofed" & "Rot Proofed"

FITLER ROPE

Avoid costly accidents and loss of personnel by equipping your work crews with Fitler Pure Manila Rope.

For your protection Fitler Brand Pure Manila Rope is identified by the Blue & Yellow Trademark.

Fitler distribution centers are strategically located for immediate service.

THE EDWIN H. FITLER CO.

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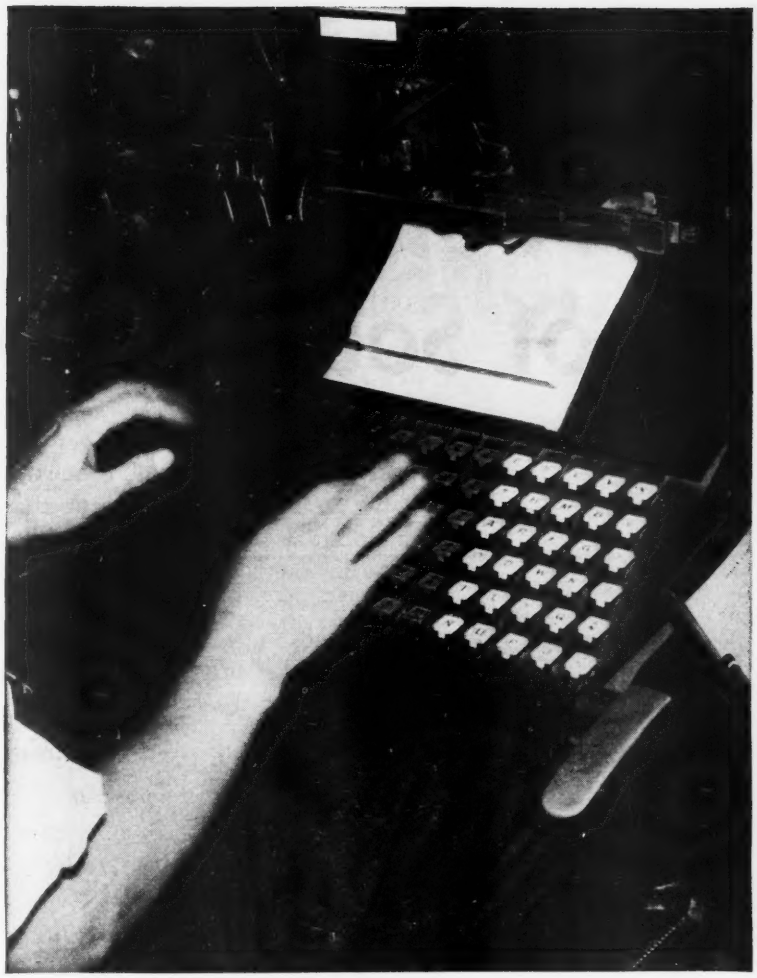
Flying Fingers



. . . that's part of what it takes to produce your printing on time— flying fingers, hands, and feet.

We're specialists in "rush" work of all kinds, and specialists in blending craftsmanship with the ability to meet deadlines.

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REGISTRATION STATEMENTS
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MARKET LETTERS
and all other types of Financial, Corporate, Public Utility and Legal Printing

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Incorporated

Established in 1889

130 Cedar Street, New York 6, N. Y. **WOrth 4-3033**

DAY-AND-NIGHT SERVICE

A Story of Sound Growth

● The postwar history of PP&L is one of steady growth, typified by an expansion program that has required nearly a dollar a second . . . a total of $276 million. Characterizing the company's postwar progress, generating capability has increased 80%, operating revenues 79% and net income 129%. As further indication of growth, the number of company shareowners, common and preferred, has increased from 58,000 to nearly 87,000.

● In actual figures, here are the pertinent statistics:

	1946	*1954*
Customers served	601,791	666,476
Kilowatt hour sales	2,801,074,385	4,612,443,959
Generating capability (kilowatts)	581,525	1,045,300
Operating revenues	$60,838,738	$108,631,668
Net income	$8,564,377	$19,638,930

(Includes The Scranton Electric Company, a subsidiary)

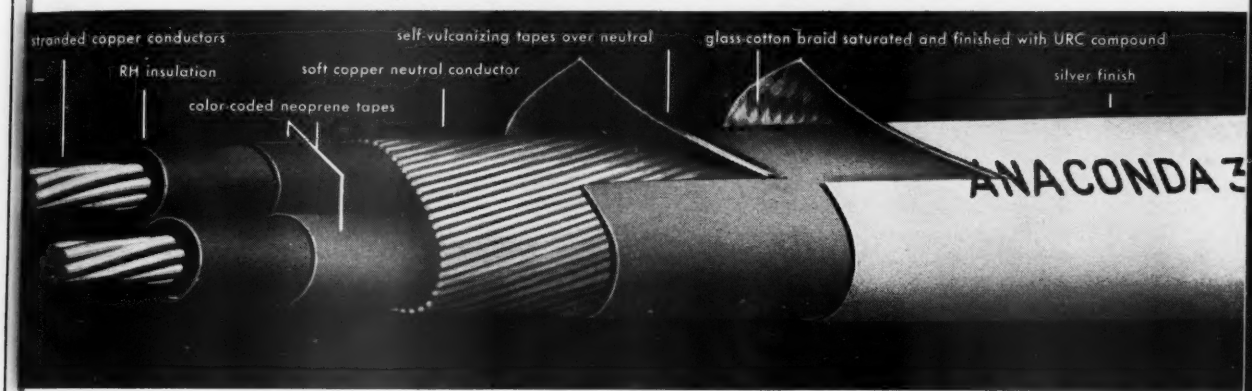
LOOKING AHEAD—The highly diversified industrial and agricultural character of Central Eastern Pennsylvania assures long-term economic progress and the company looks ahead with full confidence to a continuing growth.

PENNSYLVANIA POWER & LIGHT COMPANY

ANACONDA ANNOUNCES—NEW

SILVALINE 100-AMP service entrance cable

The *only* SE cable with URC† saturant and finish



Here's a new Underwriters Type SE service entrance cable that complies with NAHB Voluntary Adequate Wiring Code... and will help you boost kwhr sales.

The new Voluntary Adequate Wiring Code of the National Association of Home Builders calls for 100-amp service into the home.

Adequate capacity in service entrance for homes insures your future sales of electrical energy – because it removes the *initial* bottleneck to the sale of high-current appliances.

And now, Anaconda introduces the new Silvaline* 100-AMP (actually 115-amps) TYPE SE cable. Made with #2 AWG copper – and Type RH insulation.

Here are other advantages:

Uninterrupted Service. *Silvaline is the only service entrance cable with URC† saturant and finish* ... will not festoon or deteriorate. URC weather-proof protection will stay put – assures long life operation and eliminates trouble calls.

Eliminates Complaints: Silver finish on Silvaline takes any type or color of house paint... won't bleed through. Will not flake or peel. No complaints from homeowners when Silvaline is used.

Silvaline 100-AMP cable is now available. For more information, contact your local Anaconda representative or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 55331B

*Reg. U.S. Pat. Off. †Utilities Research Commission

SILVALINE *service entrance cable*

ANACONDA®

XUM

Helping the industry meet its growing loads

Leading the shift to new ASA standards with proved bushing design

The electrical industry has pushed toward constantly increasing standardization of equipment for reasons based on many sound operating economies. The recent ASA bushing standards are fresh evidence of this trend.

Westinghouse has recognized its responsibility to the industry in meeting these standards—with products of proved reliability—with the least amount of delay.

As a result, Westinghouse circuit breakers and transformers are the first available to the industry equipped with a bushing that fully meets the new standards. This bushing, the new Type S, retains the basic solder-sealed condenser construction backed by over 750,000 bushing years of service. It incorporates only minor dimensional changes over the previous design.

This quick response to industry needs is another record achievement of which we are proud and one which we believe reflects the long-term soundness of Westinghouse design aimed at meeting America's growing electrical load —economically—efficiently. J-97185

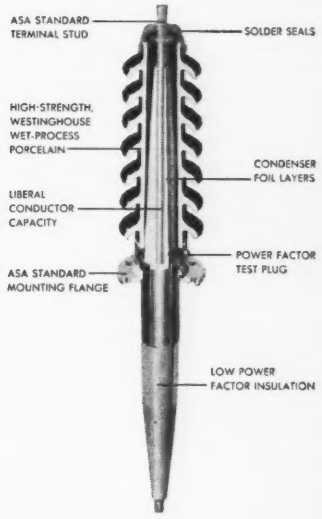
YOU CAN BE SURE...IF IT'S Westinghouse

Industry interchangeability reduces spare parts inventory

Type S condenser bushings, now available, are designed to meet ASA mechanical standards for 23 kv through 69 kv, 400- and 1200-ampere ratings.

Basic design features unchanged

Condenser construction, pioneered by Westinghouse and backed up by over 50 years of experience, uniformly distributes voltage to prevent a concentration of stress at any one point. Complete hermetic seal, formed by soldering porcelain to flange and cap, eliminates all gaskets to assure a permanent seal against external contamination.



Now available

Westinghouse manufactures condenser bushings, from stud to porcelain, under closely controlled conditions using the most modern techniques. For best service, be sure to insist on them when purchasing breakers or transformers.

For more information, call your nearby Westinghouse representative or write direct to Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

A Pioneer Banking Department for the **UTILITY INDUSTRY**

Almost a quarter of a century ago, Chase Manhattan realized the need for a highly specialized banking service for the utility industry. A Public Utilities department was formed with a special staff devoting its entire time to the industry.

Since the department's formation, and through a period of fluctuating business conditions, Chase Manhattan has provided *billions of dollars* in credits to the utility industry for the expansion of properties and the improvement of services. The bank has also assisted many companies in the solution of other corporate problems.

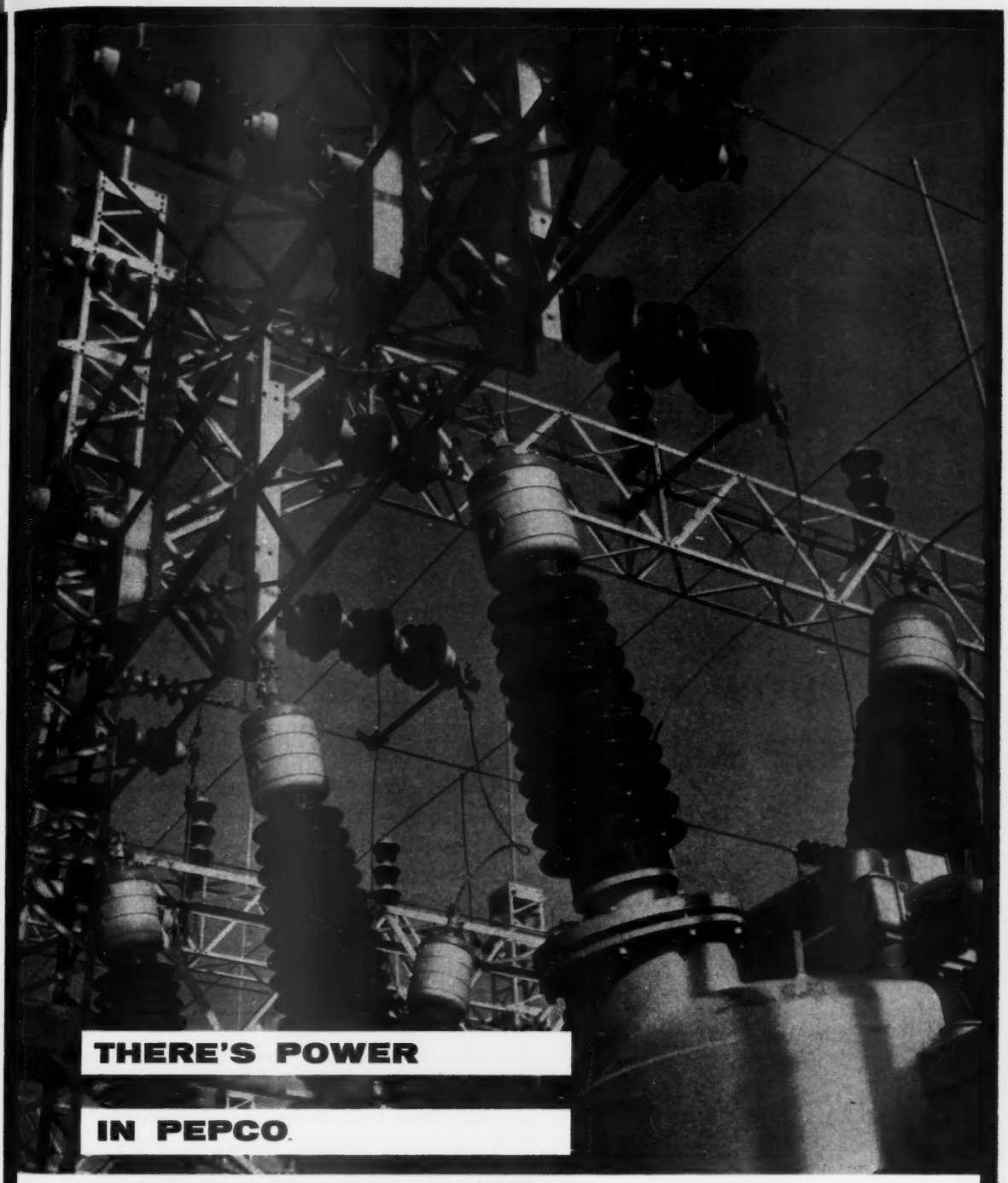
The Chase Manhattan is proud of its contribution to the phenomenal growth of the utility industry.

Why don't you talk to the people at Chase Manhattan?

THE
CHASE MANHATTAN
BANK

HEAD OFFICE: 18 Pine Street, New York 15

Member Federal Deposit Insurance Corporation



THERE'S POWER

IN PEPCO

and in the area* PEPCO serves

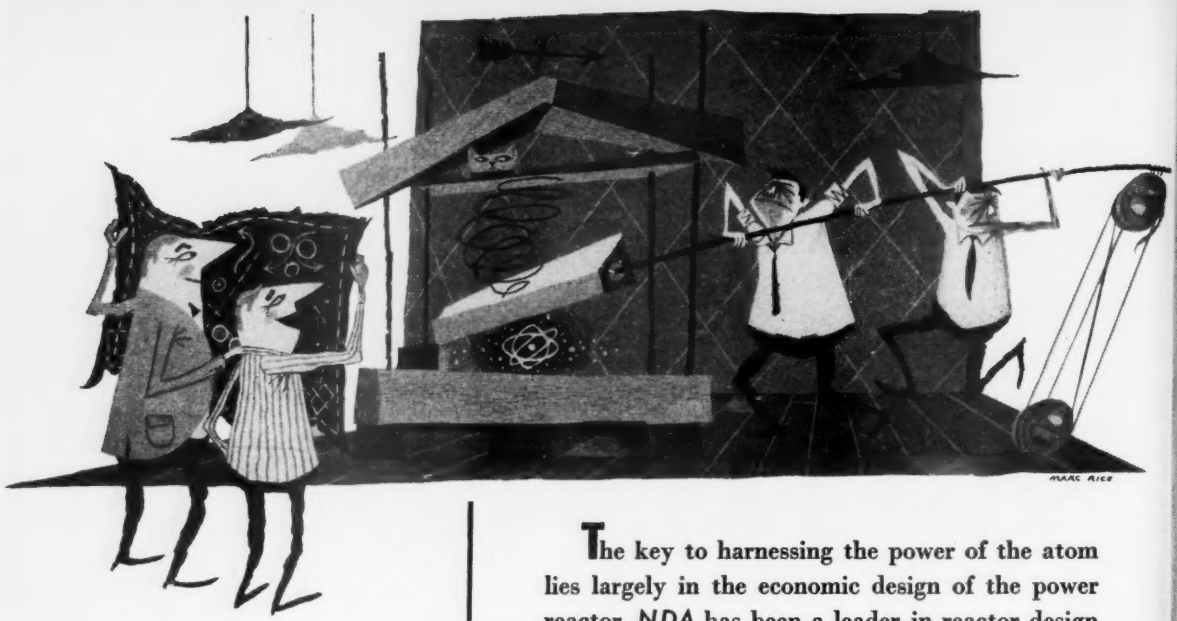
In 1954 . . . New Peaks

Demand: 741,000 kilowatts
Sales: 3,000,000,000 kilowatt hours
Customers: 313,325

*643 square miles in and around Washington, D. C

Pepco
Matchless Service

POTOMAC ELECTRIC POWER COMPANY



HOW TO SQUEEZE JUICE FROM AN ATOM

The key to harnessing the power of the atom lies largely in the economic design of the power reactor. *NDA* has been a leader in reactor design and engineering since 1948—longer than any other independent private enterprise. For example, the large-scale atomic power plant being planned by the Detroit Edison Company and its associated companies will employ an advanced reactor for which much of the nuclear engineering and physics has been evolved in the engineering offices and laboratories of *NDA*. Many other reactor designs, ranging from small units for research to large-scale power reactors capable of producing 200,000 kilowatts of electricity, have been conceived and designed by *NDA*.

Technological contributions such as these have been made possible by the coordinated efforts of *NDA*'s highly trained team of scientists, engineers and technicians. Their capabilities in the fields of research, design, development and engineering have been demonstrated repeatedly by their past achievements. Before your company initiates any project requiring advanced nuclear technology, consult *NDA* for expert counsel.

For more information about *NDA*'s services write for brochure SJ6.

WHITE PLAINS 8-5800 NDA_ NUCLEAR DEVELOPMENT ASSOCIATES, INC.
80 GRAND STREET, WHITE PLAINS, NEW YORK

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The Ultimate Tribute to Quality...

150% REPEAT ORDERS

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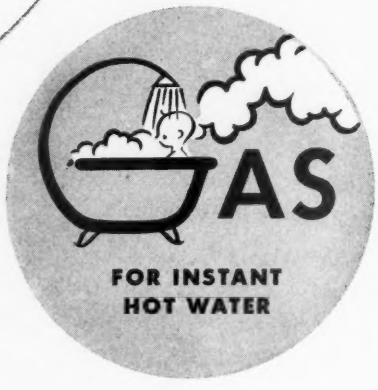
Columbia Gas System
delivers a modern miracle
24 Hours-A-Day!

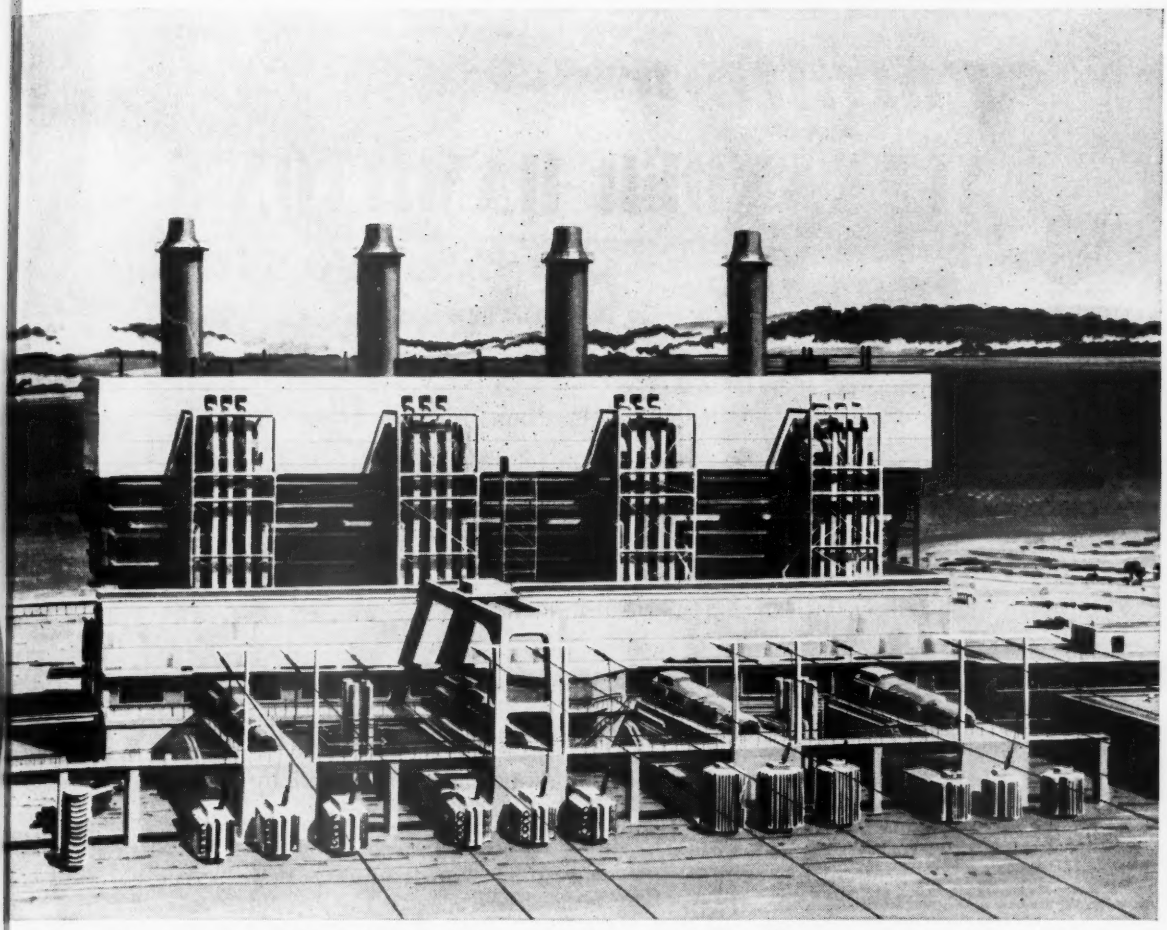


© The Columbia Gas System

CHARLESTON GROUP: United Fuel Gas Company, Atlantic Seaboard Corporation, Amere Gas Utilities Company, Virginia Gas Distribution Corporation, Big Marsh Oil Company, Central Kentucky Natural Gas Company; **COLUMBUS GROUP:** The Ohio Fuel Gas Company; **PITTSBURGH GROUP:** The Manufacturers Light and Heat Company, Binghamton Gas Works, Cumberland and Allegheny Gas Company, Home Gas Company, The Keystone Gas Company, Inc., Natural Gas Company of West Virginia; **OIL GROUP:** The Preston Oil Company.

XUM

WELCOME E. E. I. We hope this, your first convention on the Pacific Coast, will be one of your most pleasant and successful.



Latest addition to P. G. and E.'s fast-growing system is this giant, $75 million steam power plant at Pittsburg. With a rated capacity of 660,000 kilowatts, it's the largest plant of its kind west of the Mississippi.

P.G. and E. expansion nears $1½ billion mark since 1945!

By the end of this year, P. G. and E. will have spent $1½ billion on expansion within a decade. This is the largest private-utility building program in the nation. Already we've more than doubled our 1945 capacity — *both* electric and gas. Four more new power plants are planned for completion by 1958.

Our building program — past, present, and future — has a single big aim: To keep ahead of the breathtaking growth of Northern and Central California...to make sure there's plenty of dependable, low-cost gas and electricity for industry and business, for home and farm.

P·G and E·

Pacific Gas and Electric Company

Fulfilling
ALEXANDER HAMILTON'S
Dream

Since 1791, when Alexander Hamilton, the first treasurer of the United States and the greatest industrial development leader of his time, selected Paterson as the site for the Society of Establishing Useful Manufacturers at Little Falls, the state has maintained an outstanding position in American industry.

Secretary Hamilton would be astounded to see what has transpired in New Jersey manufacturing circles since his day. And the future looks even more promising. Throughout the area served by Public Service Electric and Gas Company, new factories continue to rise; many housing developments are under construction; new travel facilities contribute to this progress; new shopping centers and hospitals are being built.

The Public Service electric system is being expanded in advance of the continued demands for service. Public Service looks forward to the opportunities which it expects with the future growth of the great state of New Jersey.

Secretary Hamilton would be pleased to see his dream being fulfilled — and to know that the S.E.U.M. which he organized is still an operating entity.

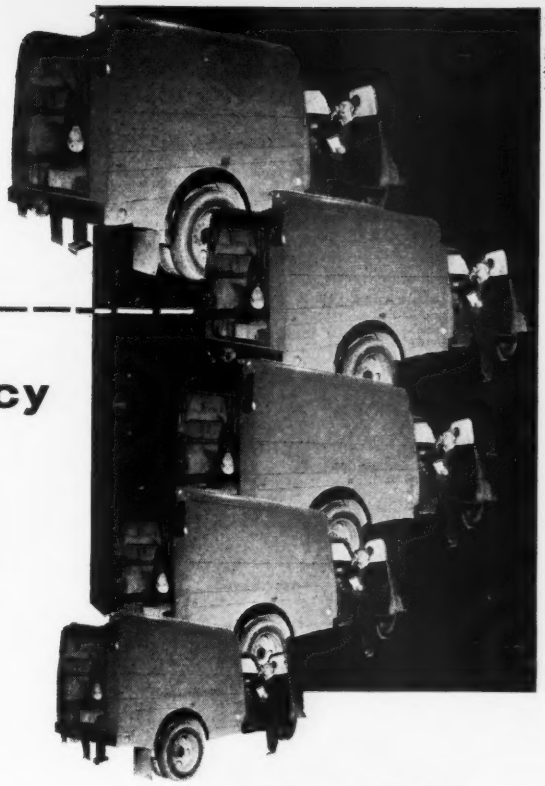
PUBLIC SERVICE

A-175-55

Duquesne Light Company finds:

service and trouble crews save time and improve efficiency

when they're equipped with **MOTOROLA** 2-way radio



Powerful profit tool cuts travel time

An emergency call comes in from the outskirts of Pittsburgh . . . a repair crew must be there—fast. The dispatcher checks his records—a truck is at work just 4 blocks from the trouble spot. A quick call from the dispatcher by Motorola 2-way radio and the truck is shifted to the emergency scene in just 5 minutes! 25 minutes travel time saved, 25 minutes additional electricity used, and satisfied customers through better service.

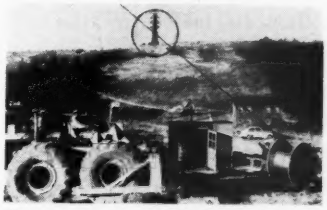
TRAVEL TIME CUT—With over 58 trucks equipped with Motorola radio, the Duquesne dispatcher has constant contact with every one of them . . . he can shift crews from job to job without their losing any time phone hunting or coming back in for orders.

LINE STRINGING SPEEDED—Using Motorola "Handie-Talkie"® radiophone, crews working on two or three consecutive towers can simultaneously exchange messages in seconds . . . crews don't halt operations waiting for a messenger to arrive.

RADIO ALWAYS WORKS—During service interruptions 2-way radio assists DuquesneLight with dependable communication for the fastest possible power system reconstruction.

A trained engineer will show you how a Motorola 2-way radio system will help you get greater efficiency from your crews, save you money and give better service.

McKeesport dispatcher pulls a short line truck off a minor repair job to answer an emergency call 4 blocks away.

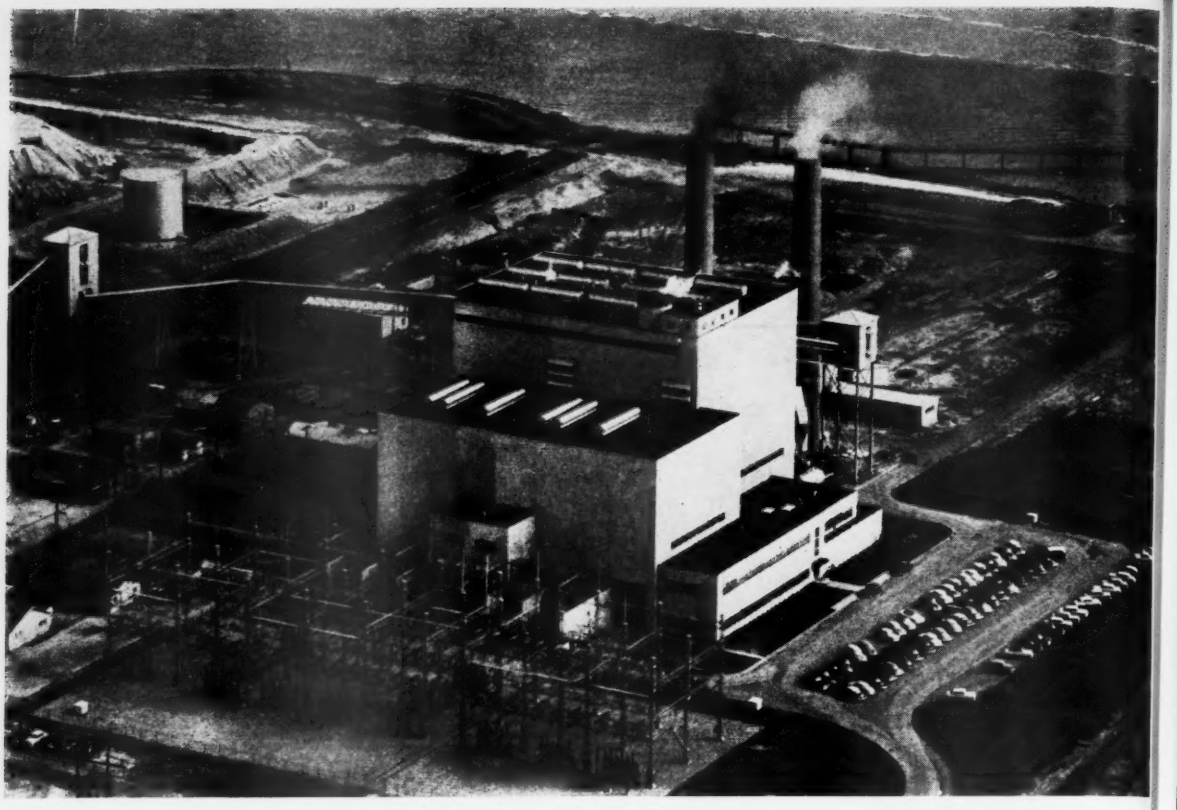


Line stringing crew in background is well beyond shouting distance and 20 minutes away by messenger . . . radio saves time, cuts costs.

Motorola 2-WAY RADIO

Motorola Communications & Electronics, Inc.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD CHICAGO 51 ILLINOIS
ROGERS MAJESTIC ELECTRONICS LTD. TORONTO CANADA

Motorola consistently supplies more mobile radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering . . . product . . . customer service . . . parts . . . installation . . . maintenance . . . finance . . . lease.
"The best costs you less—specify Motorola"



PORTSMOUTH STATION
at Portsmouth, Virginia

more power
at the "Top of the South"

Another 100,000 kilowatts of electric power were added to the Vepco power system with the recent completion of the new addition to the PORTSMOUTH STATION at Portsmouth, Va.

Another 100,000 Kw. unit, now about completed, is being added to the POSSUM POINT STATION near Quantico, Va.

And a third project — the ROANOKE RIVER HYDRO DEVELOPMENT, near Roanoke Rapids, N. C., now under construction — is expected to add still another 100,000 Kw. to the system before the end of 1955.

POWERED FOR THE FUTURE, TOO!

All this adds up to a plentiful supply of economical and dependable power for present and new industries in the Vepco service area at "THE TOP OF THE SOUTH" where the present-day capacity already is two and one-half times what it was only a few years ago.

Inquiries addressed to our Area Development Department for plant site and other information will have prompt attention and, of course, will be held in strictest confidence.

VIRGINIA ELECTRIC AND POWER COMPANY
Richmond 9, Virginia

UTILITIES
A·l·m·a·n·a·c·k

JUNE

Thursday—9 *Natural Gas and Petroleum Association of Canada begins annual meeting, Hamilton, Ontario, Canada.*	**Friday—10** *Illuminating Engineering Society begins northeastern regional conference, Lake George, N. Y.*	**Saturday—11** *Michigan Gas Association will hold meeting, Mackinac Island, Mich. June 27, 28.* ***Advance notice.***	**Sunday—12** *American Water Works Association begins annual convention, Chicago, Ill.*
Monday—13 *Edison Electric Institute begins annual convention, Los Angeles, Cal.*	**Tuesday—14** *American Society of Civil Engineers begins spring convention, St. Louis, Mo.*	**Wednesday—15** *New York State Telephone Association ends 3-day annual convention, Schroon Lake, N. Y.*	**Thursday—16** *American Institute of Electrical Engineers ends 3-day magnetics conference, Pittsburgh, Pa.*
Friday—17 *Oregon-Washington Independent Telephone associations begin joint convention, Seattle, Wash.*	**Saturday—18** *Maine-New Hampshire-Vermont Telephone associations will hold joint convention, Poland, Me., June 28-30.* ***Advance notice.***	**Sunday—19** *American Society of Mechanical Engineers begins semiannual meeting, Boston, Mass.*	**Monday—20** *American Society for Engineering Education begins annual meeting, Pennsylvania State University, State College, Pa.*
Tuesday—21 *Pennsylvania Bus Association ends 3-day annual meeting, Pocono Manor, Pa.*	**Wednesday—22** *Northwest Electric Light and Power Association, Accounting and Business Practice Section, begins meeting, Vancouver, British Columbia, Canada.*	**Thursday—23** *American Home Economics Association will hold meeting, Minneapolis, Minn. June 28-July 1.* ***Advance notice.***	**Friday—24** *National Association of Railroad and Utilities Commissioners will hold executive committee meeting, Chicago, Ill. July 8.* ***Advance notice.***

Courtesy, Chamber of Commerce of the United States

Artist's Conception of Atom-powered Electric Plant, 1975

Public Utilities
FORTNIGHTLY

VOL. 55, NO. 12 JUNE 9, 1955

Business for Human Benefit

This is a special message for PUBLIC UTILITIES FORTNIGHTLY. It stresses the importance of the work and responsibility of the electric industry from the standpoint of humanity.

BY HAROLD QUINTON*
PRESIDENT, EDISON ELECTRIC INSTITUTE

Too frequently, we hear the term "age of specialization" applied to our era of turbulent technological change as a sort of justification and excuse for the imperfect awareness which so many people have of anything except their own fields.

Much more preferable would be the title "age of humanization," because this would help focus attention on the fact that all the specialized aspects of technical advance have as their only goal the freeing of human beings to lead better, fuller lives.

The electric industry requires the services of a diversity of talents and skills. But no industry has greater need to keep forever uppermost in the minds and hearts of its people that their work—no matter how specialized—is being done for *human benefit.*

"Performance of labor for the benefit of another" is a dictionary definition of service. Service is our business—not only in what electric company people do to provide electricity to customers, but in what electricity itself does—performing pro-

*Also president of Southern California Edison Company. For additional personal note, see "Pages with the Editors."

digious feats of labor for the benefit of others.

Electric power has the versatility to do tasks of the most exacting and special kinds—in factories, offices, laboratories, schools, farms, homes—anywhere that people work and live. But the cumulative total of these innumerable special services is a constantly improving pattern of better living—with less human drudgery, better health, and more time for greater educational and cultural opportunities.

THIS imposes a unique burden on the people of the industry responsible for the production and distribution of this remarkable power. In their own thinking, planning, operations, and attitudes, they must not fail to match electricity's tremendous and growing capacity for service.

What this will require in the years ahead will be far beyond the past, in special abilities and skills, in breadth of vision and imagination. Formerly, much of what electricity did was a matter of simple substitution—the application of electricity to a process or a job where some other force had long been used. Now we are moving forward in an age where electricity's special characteristics are being channeled into electronic applications and other developments at an increasingly rapid rate, opening up hitherto undreamed-of vistas.

Not only must electric company people be continuously alert to the new ways in which electricity will be of service to their customers. They must also work constantly to improve the means and methods of electricity generation and distribution. Here, too, the future requires men of unusual skill and vision. There are still highly important steps to be taken in increasing the effectiveness of conventionally fueled power supply systems, direct descendants of Edison's early plants. But, in addition, we are on the threshold of what may develop into a new body of electric power technology based on nuclear materials.

Under these conditions, no one in the electric utility industry can afford to burrow snugly into his special field and be complacent in his thinking about other areas, about his company, or about the industry as a whole. We are at the forefront of the march of progress, and, as a service industry, it is our duty to stay there. Even if we wished to, we could not decide that the "good old days" were good enough for us, and tailor our operations to fit such a stand. Electric service is much too vital to everyone to permit such a possibility.

IT appears, then, that as our special skills move to ever higher levels, as electricity continues to perform an ever more essential rôle in our civilization, so, too, must grow our sense of service and our realization of the increasing sum of human happiness and well-being dependent on what we do.

Fortunately, we have long had the spirit of service as an article of faith. Although the electric industry is one of the nation's largest, it is not composed of corporate giants, but rather of "neighborhood" businesses devoted to serving local communities.

This interrelationship between community and company is the bedrock of sound operating policy, something that must be adhered to even more firmly in the future than in the past. Many of the nation's cities and towns are in a period

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¶ "THE *electric industry requires the services of a diversity of talents and skills. But no industry has greater need to keep forever uppermost in the minds and hearts of its people that their work—no matter how specialized—is being done for* HUMAN BENEFIT. *'Performance of labor for the benefit of another' is a dictionary definition of service. Service is our business—not only in what electric company people do to provide electricity to customers, but in what electricity itself does—performing prodigious feats of labor for the benefit of others."*

of transition, resulting from the complicated effects of population shifts, changes in business methods and technology, increased labor costs, and other factors. The change for one community may be the departure of a manufacturing enterprise around which the town's way of life has been built for generations; for another, it may be the sudden shift from a predominantly agricultural pattern to one of industrial assembly lines.

The electric utility company is in many ways the community's business partner, and its fortunes raise or fall with those of the people it serves. Consequently, it is practically impossible to overstate the importance of company interest, guidance, and help in all matters of community concern. That our industry realizes this is evidenced by a growing number of programs sponsored by electric companies to assist in many phases of community development, whether they involve new stores or new parks, ways of attracting industry, or means of making living better.

Of course, electricity itself is a great force for community growth and development. Electric company people have an increasing number of applications of their service to bring to the attention of housewives, businessmen, farmers, store proprietors—just about everyone in their areas. Where a community and its citizens make good use of electricity, they are looked upon as progressive—and attract additional progressive people. People like these prosper in turn—and, in turn, use more electricity. This could be termed the basic cycle of the modern community—and of electric company—success.

Our rôle of service and good citizenship in our communities makes work in an electric company organization particularly rewarding and satisfying. In a time when many business enterprises are becoming larger and more complex, tending to grow away from contact with the American people as individuals, electric companies find that as they grow, as the things which electricity can do multiply, they are coming closer to their customers.

I believe that this is an important factor in the appeal of the electric industry to increasing numbers of young men and women whom we must have to continue and improve our tradition of service. We offer two highly attractive characteristics: *purpose* and *leadership*. In many areas of employment today, a sense of purpose is lacking. It is not enough for most humans

simply to earn a living—they must also feel that what they do is needed, is respected, and is understood by others. Fulfillment of these requirements is clearly present in an electric company career. It is apparent, too, that we offer leadership opportunities in an industry whose prospects are unlimited; whose technology is in the van of the nation's progress; and whose growth must always be ahead of other enterprises since they must have our service to advance themselves.

We have a further unusual characteristic. The companies composing our industry work together in solving common problems and their people share their experiences in a friendly fashion for the benefit of all. This is another, highly important, aspect of our service story.

This is manifested not only by the Edison Electric Institute convention each year, but in many committee meetings and conferences, as our people gather to thrash out a myriad of problems in a variety of fields—in the process, getting to know each other better, and getting a perspective on the magnitude and vital significance of our service business.

EEI 1955 CONVENTION TIMETABLE, LOS ANGELES, CALIFORNIA

Sunday, June 12th

11.00 a. m.	Registration, lobbies, Biltmore and Statler hotels (till 5 p. m.).

Monday, June 13th

8.00 a. m.	Registration, lobbies, Biltmore and Statler hotels (till 2 p. m.).
12.00 noon	Registration, lobby, Philharmonic Auditorium (till 5 p. m.).
2.30 p. m.	First General Session, Philharmonic Auditorium.
5.00 p. m.	President's Reception, Pacific and Sierra rooms, Hotel Statler. Dancing (till 7 p. m.).

Tuesday, June 14th

8.30 a. m.	Registration, lobby, Philharmonic Auditorium (till 5 p. m.).
9.30 a. m.	Second General Session, Philharmonic Auditorium.
2.00 p. m.	Ladies' trip to Universal Studios, departing from Biltmore and Statler hotels.
2.30 p. m.	Third General Session, Philharmonic Auditorium.

Wednesday, June 15th

8.30 a. m.	Registration, lobby, Philharmonic Auditorium (till 12 noon).
9.30 a. m.	Fourth General Session, Philharmonic Auditorium.
10.00 a. m.	Ladies' tour of Hollywood and Beverly Hills, including luncheon at Copa Club of Beverly Wilshire Hotel. Edison Electric Institute, host.
8.30 p. m.	Formal presentation of Charles A. Coffin Award, and special entertainment program featuring Hollywood personalities, presented through the courtesy of General Electric Company, at the Paramount Theater, near Pershing Square.

Thursday, June 16th

8.30 a. m.	Registration, lobby, Philharmonic Auditorium (till 12 noon).
9.30 a. m.	Fifth General Session, Philharmonic Auditorium.

Is TVA's Allocation of Costs Fair?

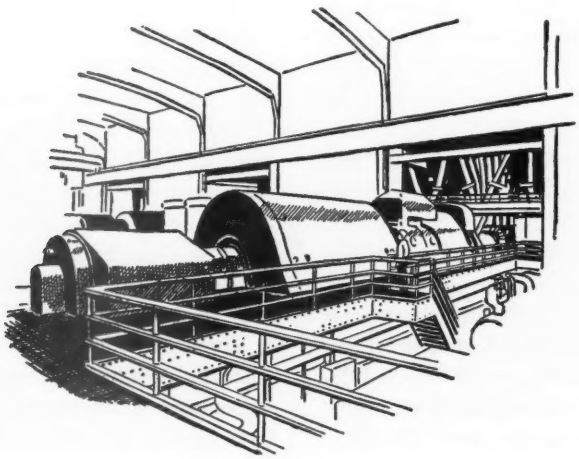
There have been questions and discussions in the past about the justification for the allocation of TVA costs with respect to the various multipurpose functions of its operation. Here is a simple account from the head of this agency as to the background, basis, and reasons for the TVA cost allocation practices.

By BRIGADIER GENERAL HERBERT D. VOGEL, USA (RET)*
CHAIRMAN OF THE BOARD, TENNESSEE VALLEY AUTHORITY

ABOUT $700,000,000 have been invested thus far in the Tennessee Valley Authority's system of multipurpose dams which function for flood control, navigation, and power production. Designed to serve these purposes in the order stated, they have performed well since their completion and have yielded a satisfactory, over-all return on the investment. There has been little conflict in meeting the needs of these interests, although at times the advocates of recreational activities have found reason to complain. Since no part of the cost of multipurpose structures is charged to recreation, however, it is not inequitable that primary consideration be given the interests which bear the burden of cost.

FOLLOWING the general principle that costs should be allocated in proportion to benefits derived, studies have been conducted over a long period of time, utilizing different methods, to evolve a system that is equitable and reasonable. It appears, however, that the intricacy of the problem is so great that many people are unable to devote the time necessary to gain a com-

*For additional personal note, see "Pages with the Editors."



plete understanding of the approach to its solution.

Because of this there has resulted in many quarters a suspicion that allocations are arrived at on a somewhat arbitrary basis in order to weigh the costs assigned to one purpose in favor of another. Since becoming chairman of the board of directors of TVA, I have received many letters indicating this view, and therefore it seems that I should make an effort to clarify the situation.

LET us start with the thought that allocation is simply a division of costs among the several purposes served by any one structure. For example, a businessman operating a store with two or more departments divides his common costs between the several departments, and the owner of a factory with more than a single product applies his overhead costs to the various products. Both are utilizing an allocation system which is similar in principle to the allocation of the costs of a multipurpose hydro project or system.

When discussing TVA's cost allocations we are chiefly concerned with the system of multiple-purpose dams. TVA does have a great deal of money invested in steam plants, and when giving the over-all system percentages these investments must be considered. However, *all* of the investment in steam plants is charged to power, and that is, of course, proper.

In referring to "allocations," therefore, we will have in mind the division of the investment in multiple-purpose projects among the purposes for which these projects are planned, designed, and operated. The TVA plan of integrated regional development was based originally on multipurpose projects; namely, dams and reservoirs in which the same structure and reservoir serve several purposes at the same time. The TVA Act specifies that the cost of such properties be allocated and charged to flood control, navigation, fertilizer, national defense, and the development of power. TVA has not allocated any of the cost to fertilizer, chiefly because that activity is charged for the power provided it; nor has any allocation been made to national defense since this is covered in the charges to defense agencies which purchase the power. As indicated earlier, there is no allocation to recreation either. Only navigation, flood control, and power are recipients of cost allocations.

THE importance of allocating the costs of the TVA investment among its multiple-purpose objectives was recognized in the original act creating the TVA, which specified that such an allocation must be made after the completion of each major project. Obviously, such an allocation is necessary as a basis for planning a program and judging the results. It is also essential in connection with the Government Appropriations Act of 1948 which requires TVA to return to the federal treasury the entire investment in power facilities within a 40-year period. The amount thus to be returned is based on the allocation of cost to power. Also in the final analysis the rate that each resident in the power area pays in his monthly power bill is determined by the amount of cost allocated to power.

Recognizing the importance of this allocation requirement, the TVA early set up a financial policy committee to study the theories of allocation and come up with a recommendation as to the best theory to use for the allocation of the cost of the

then existing 3-plant system—Wilson, Norris, and Wheeler. When this committee started its studies, there was little precedent to go on and no very logical theory of allocation for water-control developments had ever been devised. The field being so new, the committee called in three well-known economists (Martin G. Glaeser, James C. Bonbright, and Edward W. Morehouse) to assist them in their studies. Fascinating as such studies can be to mathematicians, economists, and political science experts, there is no hard and fast rule and perhaps no exact scientific formula that can be devised to give a dollar evaluation to such allocation. The elements of judgment and logic must enter into any such study.

THERE was general agreement that the entire investment should be divided into two parts: the first, the direct costs of the facilities applying to each purpose; and the second, the common costs which were applicable to all three purposes. There can be no argument with regard to the items in the first category. For example, everyone agreed that the costs of all turbines and generators and power facilities should be charged directly to power; the costs of navigation locks to navigation; and the costs of flood-control sluiceways, as well as that part of the reservoir reserved for flood-control purposes only, should be charged to flood control.

Differences of opinion appeared, however, in connection with the facilities constructed to serve all three purposes in common; namely, those of the main structure. For the present system of TVA dams and steam plants with a total investment in excess of $1.2 billion, this item of common cost of multiple-purpose projects amounted to only $409,000,000, or roughly about a third. It is in reality only this one-third of the total investment in all facilities generating power that we are talking about when we discuss the allocation of costs.

IN all, eight different methods of allocation were studied, and for convenience I may classify them into three groups. The first group attempted to apply some actual measure of return on the investment as among the three purposes: navigation, flood control, and power. The first theory considered, called the vendibility theory, attempted to evaluate the returns on the investment in the amount of cash income receivable, but, of course, power alone made a return in cash, navigation and flood control making their returns in savings to the public or in general welfare. The same applied to the second theory, the benefit theory, which tried to evaluate the benefits accruing to the three purposes. Here again it was impossible to evaluate all the benefits in monetary terms. The third theory, the use of facilities, attempted to

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measure the quantity of water used for the three purposes. But here again the problem of ascertaining the amount of water for these three purposes was found to be impossible of solution.

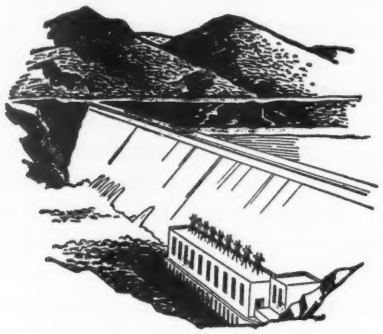
Finding themselves in a blind alley, the committee turned to a second group of theories which may be called "rule of thumb." Of these, the first, or equal proportion theory, would have allotted one-third of the costs to each of the three purposes — navigation, flood control, and power — an arbitrary rule having no basis in logic. A second possibility was to apportion the common costs in the same ratio as the direct costs, a procedure having less logic than the equal proportion theory.

THE third group of theories attempted to find a logical basis for dividing common costs in accordance with some reasonable concept of the purpose of the entire system. First, the incremental cost theory reasoned that since navigation and flood control were primary purposes and power only secondary, it would be fair to charge to the two primary purposes as much as the entire costs of an alternate system that would have provided equal navigation facilities and an alternate system that would have provided equal flood-control facilities, leaving only the incremental cost of the system to be charged to power. Obviously, under this system power would receive only a very small charge, and this the committee considered unfair.

Under a second theory, the substitutive power cost theory, the amount of the investment charged to power would be the full cost of providing the same amount of power with a single-purpose hydro or steam project. The reasoning behind this would be to recover for the government the maximum possible proportion of the project cost from the power user—the only user paying returns in cash—so that non-reimbursable uses may be obtained at minimum cost. This theory might be appropriate for water-control projects built and operated primarily for power with only incidental benefits to navigation and flood control. In the case of TVA such an assumption clearly would be contrary to the intent of Congress as expressed in the TVA Act and to the policies followed in building and operating the projects. Applying such a theory to TVA projects would ignore the decision of Congress that the regional and national interest required projects that would first serve the objectives of flood control and navigation and, by combining these two with power, would provide all three functions at a substantial saving. TVA dams were located, designed, and built pursuant to this decision. In day-to-day regulation of TVA reservoir impoundments, flood control and navigation needs always hold precedence over power generation.

FINALLY, the third theory under this group, called the alternative justifiable cost theory, was studied and analyzed. It became the unanimous choice of the committee and is still being used today. The logic behind this theory is that it distributes the theoretical savings resulting from the joint construction to the three purposes more or less in accordance with an alternate system of projects which would be required to serve each purpose separately.

In order to apply this theory, designs and estimates were prepared for a hypothetical system of dams serving the needs of navigation only, but providing facilities



The Purpose of TVA Cost Allocation

"THE importance of allocating the costs of the TVA investment among its multiple-purpose objectives was recognized in the original act creating the TVA, which specified that such an allocation must be made after the completion of each major project. Obviously, such an allocation is necessary as a basis for planning a program and judging the results. It is also essential in connection with the Government Appropriations Act of 1948 which requires TVA to return to the federal treasury the entire investment in power facilities within a 40-year period. The amount thus to be returned is based on the allocation of cost to power."

equivalent to those of the integrated system. Another system of dams was designed which would give the same amount of flood control as the integrated system, and a third system which would produce the same amount of power was designed and estimated. These three hypothetical systems had to be justified by the benefits resulting from them, and this gave rise to the name which was given it, the alternate justifiable cost theory. From these three cost figures the portions of the actual project costs determined to have been incurred solely for each of the three purposes (direct costs) were deducted, and the common costs were then prorated to the three purposes in the ratio of the balances. This theory possesses realism, and the resulting allocations of the common costs to the three purposes appear to be reasonable. A slight judgment factor is necessarily introduced, mainly serving to round off the figures, but the results are affected only slightly by this factor.

FOR the most recent TVA allocation approved by President Eisenhower, as of the close of the fiscal year 1953, the percentages for allocation of common costs are as follows: navigation 27 per cent, flood control 31 per cent, and power 42 per cent. Adding these common costs to the direct costs, the total investment in the TVA system is divided as follows: navi-

gation 12.4 per cent, flood control 14.4 per cent, and power 73.2 per cent. Since then a number of single-purpose facilities have gone into operation, and the over-all system division now is: navigation 11 per cent, flood control 13 per cent, and power 76 per cent. As more facilities are added to the system to produce power by other than hydro plants, the ratio assigned to power will continue to increase.

During the years since 1938, when the principle was established and the first allocation adopted, this theory and its application have undergone two critical reviews. The first occurred shortly after it was made when it was studied by a joint congressional committee which subjected it to a thorough engineering review by the engineer for the committee, T. A. Panter. The second was ten years later when the Federal Power Commission made another thorough review at the request of a Senate subcommittee. In both instances, the procedure was approved in detail.

In the last few years, the Bureau of the Budget has issued a circular setting out the general principle that direct costs should be charged entirely to the purposes served and those common costs should be so distributed that each purpose shares equitably in the economy of combining the functions in a multipurpose project. In May of 1950 a subcommittee of the Federal Inter-Agency River Basin Committee issued a report in which it recommends an allocation procedure called the "Separable Costs—Remaining Benefits" method. More recently the Department of the Interior, Federal Power Commission, and Corps of Engineers have adopted this method as one of the methods suitable for application to these projects. The TVA staff has made a detailed comparison of this recommended method with its own method and finds that there is no appreciable difference. The "alternate justifiable cost" theory and that of "Separable Costs —Remaining Benefits" are essentially the same except in name. Results produced by either are nearly identical with the other.

While it is true that the allocation depends on engineering estimates of three hypothetical single-purpose systems with the attendant requirements for judgment, nevertheless, even large variations in such estimates would have only a minor effect on the total percentages charged against each function. To illustrate this let me point out that, as I have mentioned, the last allocation approved by the President charging 42 per cent of common costs to power results in a total charge to power for the entire system of 73.2 per cent. Now, if instead of the careful allocation made, only one-third instead of 42 per cent of common costs had been charged to power, the final result would have been in the same range but lowered from 73.2 per cent to 70 per cent. On the other hand, if an error had been made in the other direction and 50 per cent of the common costs were to be charged to power, the total charge to power would have been increased from 73.2 to about 75 per cent. Using the more recent over-all allocations, the final result in the first instance would be to lower the total charge to power from 76 per cent to 74 per cent, and in the second instance to increase the total charge to power from 76 per cent to 78 per cent.

I would like to illustrate the importance of the TVA allocation in any estimate of benefits of the integrated system. An estimate has been made as to the savings

in freight costs that have accrued to the region by the use of the navigation channel. This shows a net saving in calendar 1954 of $10,200,000, or 7 per cent of the depreciated investment allocated to navigation. Again, in calendar 1954, flood damage averted by system control is estimated at $7,600,000—all at Chattanooga, Tennessee—to bring total direct flood savings to $58,866,000 for the Tennessee valley, lower Ohio, and lower Mississippi river basins. This is only part of all flood-control benefits. The average annual flood-control benefits of the TVA multiple-purpose system have been estimated conservatively at about $11,000,000, which is about 6 per cent of the investment allocated to flood control.

CONSIDERING that no allocations have been made against fertilizer production, which is charged directly for power consumed, against munitions development in the interest of national defense, or against recreational advantages which have promoted economic development of the region, it follows that flood control, navigation, and power are carrying the entire cost of the multipurpose system and that any errors of judgment made in arriving at allocations among them are in a low order of significance.

Socialism Creeps More Slowly

"THE *brightest spot in Eisenhower's budget was the reflection of his determination to halt the trend toward federal Socialism in the field of electric power and in the federal exploitation of natural resources.*

"In this the President is following the leadership of his wise Secretary of the Interior and also his own personal knowledge of the spending proclivities of the Army Corps of Engineers.

"The Bureau of Reclamation, which under previous administrations was a mighty force for socialization, is rapidly being cut down to rational limits. Expenditures in this bureau in 1953 were $235,000,000; for 1954, an estimated $182,000,000; and for 1955, $167,000,000. For the Army Engineers the figures for the three years were $579,000,000; $416,000,000; and $361,000,000. . . .

"Eisenhower, to use the Shakespearean phrase, has 'scotched the snake of Socialism but not killed it.' Perhaps it is too much to expect the killing of such a hardy creature in so short a time. We may content ourselves, however, with the reflection that creeping Socialism is creeping more slowly."

—RAYMOND MOLEY,
Columnist.

Model State Law for Atomic Energy Regulation

This is an account of a working model of proposed state legislation designed to fill out the gaps between the state and federal level in the forthcoming regulation of atomic energy. A feature of this law is the inclusion of the full text of a model bill, which has already become law in Maine and seems destined for early passage in other New England states.

By the Honorable SUMNER T. PIKE*
CHAIRMAN, MAINE PUBLIC UTILITIES COMMISSION

It has been evident for about a year that the development of atomic energy is entering into new phases, particularly with reference to the production of useful power from the nucleus of the atom.

The federal statute approved August 30, 1954, attempts to bring up to date the so-called McMahon Act, passed in 1946. The present act removes or modifies many of the prohibitions and restrictions which either were written or interpreted into the original law. Since the passage of this act, the atomic-powered submarine *Nautilus* has undergone extensive trials, which apparently are not yet completed. In so far as the public has been informed, this ship has demonstrated a supremely useful application of nuclear power.

The federal Atomic Energy Commission, in connection with the Duquesne Light Company of Pittsburgh and several other contractors, is constructing at Shippingport, Pennsylvania, a plant designed to produce 60,000 kilowatts of electricity, all to be derived from atomic energy. The commission is also, through contractors, conducting and financing a series of experimental nuclear reactors, each one designed to test out a particular combination of elements with the hope that these experiments may lead, within a few years, to economical competitive power from the atom. Much more pertinently, from the point of view of the state commissions,

*For additional personal note, see "Pages with the Editors."

one public utility company, the Consolidated Edison Company of New York, has proposed the construction of a large plant in its service territory. This plant, with the exception of the nuclear fuel itself, is to be completely financed with its own funds.

ON April 1, 1955, the commission announced that it had received proposals from four public utility groups. Each proposal involves the construction of a plant of considerable size, with substantial contributions by the applicant companies, but dependent to some extent on financial and other aid from the Atomic Energy Commission. While these proposals differ somewhat in detail, the proposal of Yankee Atomic Electric Company is fairly typical. Yankee Atomic Electric Company at present is composed of eleven New England public utility systems. It plans to construct a plant somewhere in western Massachusetts, to be used for the joint benefit of the subscribing companies. William Webster, president of the Yankee Company and executive vice president of New England Electric System, one of the largest members of the Yankee group, states the purposes of the proposed plant as follows:

> Through the construction and operation of the proposed plant, we expect to explore the economic and practical aspects of this type of electric generation. It may take several years of experimental work before we can determine to what extent atomic energy will be used in the future by New England's electric companies. The potentialities are unlimited, because the concentrated energy possessed by atomic fuels will simplify problems of plant location, fuel transportation, and storage. We believe the new fuel is going to play an important rôle in New England's electric future and we feel that the lessons learned in the plant will produce the answer as to the extent we may depend upon electricity from the atom in formulating our short- and long-range expansion plans.

THESE, as well as other atomic energy developments, bring us to the question "How ready are we to meet the problems which will inevitably show up?" New England has perhaps been fortunate in that for several years it has had an atomic energy committee of the New England Council which has been able to keep an eye on forthcoming developments and to some extent prepare us for the day when atomic power should amount to something more than just talk.

Early in 1954 the New England governors as a group, under the leadership of then Governor John C. Lodge of Connecticut, established a New England Governors' Committee on Atomic Energy under the chairmanship of the late Karl Compton, to make a study of current developments in this field and to report its findings to the governors of the six states by the end of 1954. As is characteristic of atomic energy, things moved so fast during the year that a definitive report was not ready on the target date but since four out of six governors left office at the end of the year, a preliminary report was issued late in December. The final report is now in process of preparation and its issuance may be expected at any time.

While a good many parts of the study relate specifically to New England con-

ditions, portions of it may very well be useful to other areas which will be faced with similar problems.

ONE of the earliest projects was to draw up a model statute, to be introduced into each one of the state legislatures during the 1955 sessions. There were perhaps two principal motives behind the drafting of this proposed statute. One was to set up, in harmony with the federal act of 1954, a framework within which the various problems could be identified as they occurred. The other one was the objective, perhaps a negative one, of having at the beginning a carefully thought out law, rather than the sort of "happy thought" semiemergency legislation that is likely to be introduced when problems unexpectedly hit a law-making body which has no background on the subject.

The New England committee asked David F. Cavers, associate dean of the Harvard Law School, to take the lead in the drafting work. After a study of the new federal act, Dr. Cavers produced a suggested draft. This was gone over by legal groups including some bar associations and in its final form was presented to the state governors late in 1954. Obviously, in each case certain modifications had to be made to suit the particular machinery of the individual state. However, at the moment of writing, the act has become law in Maine, it seems to be well on toward passage in New Hampshire, and is undergoing hearings in Connecticut.

The writer is unaware of the exact status of the bill in Massachusetts, Vermont, and Rhode Island.

THE three principal objectives for each state as stated in the act are:

(1) To adapt its laws and regulations to meet the new conditions in ways that will encourage the healthy development of industries producing or utilizing atomic energy while at the same time protecting the public interest;

(2) To initiate continuing studies of the need for changes in the relevant laws and regulations of the state by the respective departments and agencies of the state government responsible for their administration;

(3) To assure the co-ordination of the studies thus undertaken, particularly with other atomic industrial development activities of the state and with the development and regulatory activities of other states and of the government of the United States.

¶ "STATE *public utility commissions with their varying statutory backgrounds and duties will find that their involvement in atomic energy may vary considerably from state to state. In some instances they will have to consider regulations as to stream and other water pollution. In others, they will have to develop regulations for safe transport on the highways, but in most cases the major problem for the state commission promises to be that of oversight of investment, leading of course to the rate-making function which will be involved.*"

STATE public utility commissions with their varying statutory backgrounds and duties will find that their involvement in atomic energy may vary considerably from state to state. In some instances they will have to consider regulations as to stream and other water pollution. In others, they will have to develop regulations for safe transport on the highways, but in most cases the major problem for the state commission promises to be that of oversight of investment, leading of course to the rate-making function which will be involved. To take my own state of Maine as an example, the public utilities commission will be interested in the possible pollution of public water supplies. It will have a direct interest in the commercial transportation of nuclear and by-product materials, especially when dangerous radiation is involved, but it has a present concrete problem involved in the Yankee Atomic Electric Company.

The Central Maine Power Company, one of the participants, plans at present to put in about $1,000,000 as its share of the enterprise. This is about double the amount originally contemplated and is, in no sense, to be taken as final and definitive. The plant is to be erected in western Massachusetts, well beyond the jurisdiction of the Maine Public Utilities Commission. Any hope that the first plant to be built can produce economical competitive power is a pretty thin one. There will obviously be substantial expenses involved. It is much more than a possibility that the whole amount will eventually have to be written off.

On the other hand, our commission feels that it would be remiss in its basic duty to the electric consumers in this state, if it did not encourage, in every reasonable way, intelligent interest in this subject by the groups which are responsible for our electric power supply. It may very well be that the cost should be amortized over a period of say five or ten years, but at the present moment it looks as though it may have to be held in a suspense account until the investors, the commission, and the public know a great deal more about the subject.

EVEN that much is only very temporary and tentative thinking. But it is typical of atomic energy in all its development up to the present. No prediction is any good for very long. A premature verdict as to practicability would not be in the interest of any of the people involved. Therefore, we shall follow the developments, not only in New England, but in other areas, with the most intense interest and expect to encourage expenditures of time and money by the utilities for the development of atomic energy, so long as they do not interfere with their main job, which is to produce power at a price the public can afford to pay.

Realizing the rapidity of change which is characteristic of the whole atomic energy art, it may be interesting to look further at the model statute proposed by the New England governors' committee. Perhaps the central feature of this bill is the appointment of a citizen (1) to serve as advisor to the governor with respect to atomic industrial development, (2) as a co-ordinator of development in regulatory activities, (3) as deputy of the governor in material relating to atomic energy, not only within the state and the New England states but with other states and with the federal government. This man has the duty of transmitting (in both

Commission Responsibility for Atomic Development

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directions) information of all sorts regarding atomic energy matters to and from the governor and the following agencies:

(1) The Department of Public Health on matters of public health and safety;

(2) Department of Labor on working condition hazards;

(3) Workmen's Compensation Commission on matters of clearance of injuries or compensation therefor;

(4) Highway Department on transportation problems;

(5) The public utilities commission as to commercial transportation of hazardous materials and the participation of public utilities in atomic energy development;

(6) Insurance Department in matters affecting that area and of course other departments and agencies as the necessity arises.

At this time it looks as though the coordinator's duties at first will largely consist of acting as a clearing house for information both from and to the departments involved. If, as may be the case,

atomic energy progress outsteps present estimates, it may be a very short time before the co-ordinator will be a busy man indeed. When that time comes, one of his duties will be to suggest to the executive and legislative branches reasonable and proper legislation to meet circumstances as they occur. If the job is properly done, there is a fair chance the various developments of atomic energy may occur without undue disturbance of our body politic. If, however, we wait until some spectacular incident has forced hasty action, we may be in a position of hampering atomic development and thereby injuring our own communities.

THE writer has had the experience of being fairly close to the subject, since he was appointed to the original federal Atomic Energy Commission in 1946. About the only dependable lesson he has drawn from the experience is that the subject won't stay hitched, predictions are frequently obsolete before they get into print, and that constant vigilance, combined with flexibility, seems to be the only policy which pays off.

DRAFT OF AN ACT TO CO-ORDINATE DEVELOPMENT AND REGULATORY ACTIVITIES RELATING TO THE PEACEFUL USES OF ATOMIC ENERGY

Be it enacted by etc.

SECTION 1. *Declaration of Policy.* (a) The state of ..... endorses the action of the Congress of the United States in enacting the Atomic Energy Act of 1954 to institute a program to encourage the widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public; and therefore declares the policy of the state to be—

(1) To co-operate actively in the program thus instituted; and

(2) To the extent that the regulation of special nuclear materials and by-product materials, of production facilities and utilization facilities, and of persons operating such facilities may be within the jurisdiction of the state, to provide for the exercise of the state's regulatory authority so as to conform, as nearly as may be, to the Atomic Energy Act of 1954 and regulations issued thereunder, to the end that there may, in effect, be a single harmonious system of regulation within the state.

(b) The state of ..... recognizes that the development of industries producing or utilizing atomic energy may result in new conditions calling for changes in the laws of the state and in regulations issued thereunder with respect to health and safety, working conditions, workmen's compensation, transportation, public utilities, life, health, accident, fire, and casualty insurance, the conservation of natural resources, including wild life, and the protection of streams, rivers, and air space from pollution, and therefore declares the policy of the state to be—

(1) To adapt its laws and regulations to meet the new conditions in ways that will encourage the healthy development of industries producing or utilizing atomic energy while at the same time protecting the public interest; and

(2) To initiate continuing studies of the need for changes in the relevant laws and regulations of the state by the respective departments and agencies of the state government responsible for their administration; and

(3) To assure the co-ordination of the studies thus undertaken, particularly with other atomic industrial development activities of the state and with the development and regulatory activities of other states and of the government of the United States.

Comment on Section 1: The principal function of this section is to state the objectives of the state act. The section does not seek to set forth findings to provide the bases to sustain the constitutionality of the statute since, in aligning the enacting state's policy with that of the federal government, the act should enable the state to enjoy the benefit of the findings declared by Congress in the Atomic Energy Act of 1954.

SECTION 2. *United States Licenses or Permits Required.* No person shall manufacture, construct, produce, transfer, acquire, or possess any special nuclear material, by-product material, production facility, or utilization facility or act as an operator of a production or utilization facility wholly within this state unless he shall have first obtained whatever license or permit, if any, is required for engaging in the same type of activity by the Atomic Energy Act of 1954 of the United States or by any regulation issued thereunder.

Comment on Section 2: Some question has been raised whether, in the absence of a war emergency, the federal government's authority reaches as far as the licensing requirements of the 1954 Atomic Energy Act would extend it. If this doubt should prove valid, a gap would exist in regulatory power. The gap's exact dimensions are difficult to tell, but certainly it would not extend to matters involving interstate commerce. By covering intrastate activities, § 2 makes sure that no gap can exist. If the federal government requires a license or a permit for any particular type of activity including among the broad categories of activities listed in § 2 and if an activity of the same type is conducted wholly within the state, § 2 would forbid the conduct of that activity within the state unless the federal license or permit had been obtained. If the federal government requires no license—as in the case of a federal contractor—the state would impose no independent requirement.

If the constitutional authority of the federal government is held to cover the listed activities, even when conducted wholly within a state, the state would have concurrent authority with the federal government unless the latter were held to have pre-empted the field.

In the period that must elapse before these jurisdictional doubts are laid to rest, § 2 will serve as a deterrent to any person seeking to escape the legal requirements through a gap in regulatory power.

The question may be raised whether this section represents an unconstitutional delegation of future legislative power to the federal government by the state government. The federal government would undoubtedly announce new license requirements after the enactment of the state act, and it may be argued that these new requirements represent a change in state law. Section 2 seems reasonably safe from attack, however, since it merely uses the possession of the federal license as a fact indicating that the possessor is a fit person to engage in the activity to which the license applies. Section 2 is like a statute conferring certain privileges on persons who have been admitted to the bars of other states. Statutes of this sort are not rendered unconstitutional by the fact that the requirements for admission to the bar may be changed by the other states in the future, and so future claimants of the local privilege may have been admitted to the bar under rules which other states have issued after the adoption of the local statute.

The *Opinion of the Justices,* 239 Mass 606, 133 NE 453 (1921) deals with a legislative attempt to punish under state law violations of the federal prohibition laws which, of course, were subject to change by the Congress. This was held invalid as an unlawful delegation of legislative power. One of the sections declared invalid contained a provision relating to federal permits that was like that in § 1. However, the same section also declared violations of the federal law to be violations of state law and so was clearly invalid on the general ground of objection stated by the court. There was no occasion to test the separability of the section's provisions, and so the good part fell with the bad.

The activities covered by § 2 do not extend to "source materials," *e.g.,* uranium ore. The handling of these is not attended by danger. The application of regulations is likely to turn on minor variations in ore content. The adoption of state laws or regulations relating to source materials might, in effect, cast a cloud on title concerning source material and embarrass activities involving them. Absent a showing of a need for protection, no action now seems called for.

SECTION 3. *Conduct of Studies Concerning Changes in Laws and Regulations with a View to Atomic Industrial Development.* Each of the following departments and agencies of the state government is directed to initiate and to pursue continuing studies as to the need, if any, for changes in the laws and regulations administered by it that would arise from the presence within the state of special nuclear materials and by-product materials and from the operation herein of production or utilization facilities, and, on the basis of such studies, to make such recommendations for the

enactment of laws or amendments to laws administered by it, and such proposals for amendments to the regulations issued by it, as may appear necessary and appropriate:

(a) The Department of Public Health, particularly as to hazards, if any, to the public health and safety.

(b) The Department of Labor, particularly as to hazardous working conditions, if any.

(c) The Workmen's Compensation Commission, particularly as to the time and character of proof of claims of injuries and the extent of the compensation allowable therefor.

(d) The Department of Public Highways, particularly as to the transportation of special nuclear materials and by-product materials on highways of the state.

(e) The public utilities commission, particularly as to the transportation of special nuclear materials and by-product materials by common carriers not in interstate commerce and as to the participation by public utilities subject to its jurisdiction in projects looking to the development of production or utilization facilities for industrial or commercial use.

(f) The Department of Insurance, particularly as to the insurance of persons and property from hazards to life and property resulting from atomic development.

(g) The Department of Conservation, particularly as to the hazards, if any, to the natural resources of the state, including wild life, and as to the protection, if necessary, of rivers, streams, and air space from pollution.

(h) Such other departments and agencies as the governor may direct and for the purposes specified by him.

Comment on Section 3: This section is premised on the supposition that study will disclose a need for a number of changes in existing laws and regulations to take care of new conditions created by atomic development for peaceful uses. The statutory directive will justify the use by the several departments and agencies of their personnel in making the studies thus called for, a step that some of them might otherwise be reluctant to take.

The names of departments and agencies used in this draft are given simply as examples. The list would not be accurate in any single state.

SECTION 4. *Co-ordination of Studies and Development Activities.* (a) The governor and council shall appoint a citizen of this state to serve as adviser to the governor with respect to atomic industrial development within the state; as co-ordinator of the development and regulatory activities of the state government relating to the industrial and commercial uses of atomic energy; and as deputy of the governor in matters relating to atomic energy, including participation in the activities of any committee formed by the New England states to represent their interest in such matters and also co-operation with other states and with the government of the United States. The person so appointed shall have the title of Co-ordinator of Atomic Development Activities.

(b) The Co-ordinator of Atomic Development Activities shall have the duty of co-ordinating the studies, recommendations, and proposals of the several departments and agencies of the state government required by § 3 of this act with each other and also with the programs and activities of the Department of Industrial Development of the state. So far as may be practicable, he shall co-ordinate the studies conducted, and the recommendations and proposals made, in this state with like activities in the New England and other states and with the policies and regulations of the United States Atomic Energy Commission. In carrying out his duties, he shall proceed in close co-operation with the Department of Industrial Development.

(c) The several departments and agencies of the state government which are directed by § 3 of this act to initiate and pursue continuing studies are further directed to keep the Co-ordinator of Atomic Development Activities fully and

currently informed as to their activities relating to atomic energy. No regulation or amendment to a regulation applying specifically to an atomic energy matter shall become effective until thirty days after it has been submitted to the co-ordinator, unless, upon a finding of emergency need, the governor waives all or any part of this 30-day period.

(d) The Co-ordinator of Atomic Development Activities shall keep the governor and council and the several interested departments and agencies informed as to private and public activities affecting atomic industrial development and shall enlist their co-operation in taking action to further such development as is consistent with the health, safety, and general welfare of this state.

(e) The Co-ordinator of Atomic Development Activities shall be paid a salary of $..... per annum.

Comment on Section 4: This section is premised on the proposition that what is everybody's business is nobody's business and therefore seeks to make sure that atomic development and regulation is somebody's business. The office of the Co-ordinator of Atomic Development Activities is proposed so that at least one person in a central position in the state government will be responsible for seeing that the way is cleared for atomic development and that this is done without jeopardizing the public interest. If substantially similar statutes were enacted in all the New England states, the co-ordinators could co-operate in developing a vigorous and sensible regional program. In any event, it is to be hoped that the present New England Committee on Atomic Energy will be succeeded by a similar body charged with encouraging a regional approach to the problems of atomic industrial development and any co-ordinators appointed in the New England states could work closely with that organization.

Since the co-ordinator's duties would cut across the fields of activity of many departments in the state government, there is some risk that he would be bypassed by departments that were not alive to the need for co-operation. To make sure that the co-ordinator can discharge his function effectively, it is provided in paragraph (c) that he be kept fully informed and given advance notice of proposed regulations so that he may make his views heard before possibly detrimental action can be taken. This requirement may be waived by the governor. The provision has some analogy in the various provisions for advance notice of proposed action that must be given to the Joint Committee on Atomic Energy in Congress. However, the flow of information is not to be wholly in one direction. Paragraph (d) requires the co-ordinator to keep the state government informed of atomic developments.

The work of the co-ordinator would be on a full-time basis in some states, but in others part-time service would probably suffice. No attempt has therefore been made in paragraph (e) to specify either a salary for the co-ordinator or the terms of his service.

SECTION 5. *Injunction Proceedings.* Whenever, in the opinion of the Attorney General, any person is violating or is about to violate § 2 of this act, the Attorney General may apply to the appropriate court for an order enjoining the person from engaging or continuing to engage in the activity violative of this act and upon a showing that such person has engaged, or is about to engage in any such activity, a permanent or temporary injunction, restraining order, or other order may be granted.

Comment on Section 5: No criminal penalties have been provided for violation of § 2. The cases, if any, are sure to be rare, and are likely to be intended to test the scope of federal controls rather than to violate wilfully a legal requirement known to be valid. To meet this situation, an injunction proceeding should suffice.

SECTION 6. *Funds Provided.* There is hereby authorized to be appropriated the sum of $..... for the salary of the Co-ordinator of Atomic Development Activities and for secretarial, travel, printing, and other necessary expenses incurred by him in the performance of his duties.

SECTION 7. *Definitions.* As used in this act,

(a) The term "atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

(b) The term "by-product material" means any radioactive materials (except

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special nuclear materials) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear materials.

(c) The term "production facility" means (1) any equipment or device capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device.

(d) The term "special nuclear material" means (1) plutonium and uranium enriched in the isotope 233 or in the isotope 235, and any other material which the governor declares by order to be special nuclear material after the United States Atomic Energy Commission has determined the material to be such; or (2) any material artificially enriched by any of the foregoing.

(e) The term "utilization facility" means (1) any equipment or device, except an atomic weapon, capable of making use of special nuclear materials in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public, or peculiarly adapted for making use of atomic energy in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device.

Comment on Section 7: The definitions contained in paragraphs (a) and (b) are identical to the corresponding ones in the Atomic Energy Act of 1954. However, the definitions of "production facility" and "utilization facility" in paragraphs (c) and (e) respectively have been broadened by eliminating the provisions in the federal act which give the commission power to narrow the category by rule. After the word "device" in the first line of (c) and "weapon" in the second line of (e), the federal act includes the phrase "determined by rule of the commission to be" and also, after the word "device" at the end of each definition, it includes the phrase "as determined by the commission." Both these phrases have been eliminated.

The reason these definitions have been revised in this way is that their retention in their original form would have left the applicability of § 2 to depend on rules of the Atomic Energy Commission to be made in the future. This might have led to a decision that § 2 represented an unconstitutional delegation of legislative power by the state to the federal government.

Fortunately, for the purposes of § 2, there is no need to narrow the definitions as closely as the federal act requires since in no case would § 2 impose any actual requirement for an intrastate activity unless the federal act required a license or permit for the same type of activity. The scope of the federal act thus becomes the final determinant of the scope of § 2, but in a way that is believed to be constitutional.

In § 3 the same terms are used in describing the areas of study to be pursued by the several departments and agencies of the state government. Despite the fact that the areas are defined in this act more broadly than the corresponding areas are defined in the federal act, there would be no reason for the departments and agencies to carry their studies to the logical extremes permitted by these state definitions.

The definition of "special nuclear material" in paragraph (d) differs from the federal definition by giving the governor power to enlarge the category, a power conferred by the federal act on the Atomic Energy Commission. However, the governor is authorized to take this action only after the commission has added the new material or materials to the category. This definition could not be treated as were the definitions of the facilities since it provided no broad category which the commission had power to narrow. Fortunately, as a practical matter, there will in all probability be very few additions to the list so the governor will not be burdened by the task of keeping the state act in line with the federal in this respect.

The federal definition also explicitly excludes "source material," an exclusion that seems to have been added out of excess of caution. To introduce it here would require a definition of "source material." The precaution seems unnecessary.

Just Who Are "the Utility Interests"?

In the heat of controversy over public ownership and business-managed power development we hear frequent references to public utility companies as "special interests" or "the utility interests," or "the power trust." The implication is that this business, or the people behind it, is being operated by some peculiarly malevolent antisocial group of human beings.

By HAROLD H. YOUNG*

It is not uncommon in discussions of matters pertaining to the nation's power supply to note references to "the utility interests." Phraseology may vary but some such epithet flows freely from pens and tongues of people sympathetic with public power. The words are suggestive of the lurking presence of some sinister group, representing the investor-owned electric companies, which contrives and connives to achieve its own ends with reckless disregard of general public welfare.

That raises the question which serves as the caption for this article: "Just who are 'the utility interests'?"

Such a body cannot exist independently of the individuals who make it up. There can be no whole without component parts. Therefore, if the concept of "the utility interests" is a correct one, we must be able to track down somewhere the group of people which it includes. Let's try.

This trend of thinking on my part

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originated a little while back when I read a news item reporting that Grady Thompson of Guymon, Oklahoma, had been named as "Mr. Guymon—1954" by the citizens of that community. The award is made annually by civic groups to the man deemed to have been the most useful citizen during the year past.

Now it happens that Grady Thompson is the Oklahoma division manager of Southwestern Public Service Company. I mention the incident because Grady is very typical of local utility company representatives across the land. If communities were generally to emulate Guymon, Oklahoma, in appraising their most useful citizens, I would be willing to make a substantial wager that utility company employees would come up with a very high standing.

I MAKE this confident assertion because in my travels around and about the country I have learned at firsthand of the contributions which these individuals make in the towns and cities where they live.

It has become a tradition to look to the representatives of the utility companies to head up or help most of the worth-while civic undertakings which come along. Whenever you have a Community Chest drive or any similar fund-raising campaign, the utility people are in the front ranks. They are among the most active in chamber of commerce undertakings. They are "kingpins" in the service clubs. Rare, indeed, is the utility manager who has not served his apprenticeship in the local Rotary, Lions Club, Kiwanis, or similar organization. These people provide leadership for Boy Scouts and other youth movements. They sit on the boards of hospitals, children's and old folks' homes, and other institutions too numerous to mention.

The pattern is an established one. Talk with any local utility manager or other employee around that level and he will tell you that he considers it an integral part of his assignment to be a useful citizen in his community. That is expected of him and he plans his schedule accordingly.

Surely in this fine outstanding group of high-type men, we cannot find anybody who is even a reasonable facsimile of the sort of person who is suggested when somebody talks about "the utility interests." Men cannot be dedicated to community service and at the same time be promoting issues inimical to the public welfare. No one can work both sides of the street—certainly not for long. No, in our search for "the utility interests" we must eliminate Grady Thompson and his counterparts across the country. They just don't fit the description.

Perhaps our public power representatives and their politician friends would insist that the folks we are seeking will be found among the "big brass" of the utility companies. If that is the case, then the presidents of these enterprises would probably be the folks we are looking for, because they not only are the titular heads of their companies but usually they are the ones who established the pattern of their companies' operations.

NOW I know personally a great many public utility company presidents and can speak about them from firsthand contacts, just as I talked about the local managers after having had the pleasure of meeting a wide representative group.

The typical utility president is a man who has climbed the ladder rung by rung,

who has arrived at his position of recognized responsibility "the hard way." Sometimes a man who heads a company today is serving the same enterprise in which he started his career. Among the older generation of executives you will often find that a man was advanced by transfers to more important posts in different companies as he went along. This was a well-established procedure in the holding company days when men were moved around the various operating companies in a system.

Not all utility presidents have spent their whole careers in the industry. Occasionally a man has been brought in to the headship of a company from the legal profession, from an engineering or service organization, or from some other outside source.

In such a case, the selection has usually been made because the man had worked closely with the company to which he was called and had intimate familiarity with its affairs which, combined with leadership qualities, made him the most logical choice.

However, generally speaking, these chief executives are people who started out with modest jobs and got to the top through sheer ability and achievement. They are not men who were "born with silver spoons in their mouths."

I want to press a little further my point that these men have earned the spots they fill. Let me illustrate with brief thumbnail sketches of some of the presidents I know. As a random check, let's stick pins in the four corners of the map of the country.

The easternmost pin hits Bangor Hydro-Electric Company whose president is Edward Graham, one of the deans of the industry, with presidential tenure dating from 1915. He started out working right from preparatory school in 1907, back in the days when trolley operations were more important than light and power. His first four years were in various departments of the old Bay State Street Railway organization in Massachusetts.

One of the enterprises by which he was later employed was the Lewiston, Augusta & Waterville Street Railway in Maine. Having ridden the LA&W for a while as a school kid, I can testify that anybody who tried to keep that outfit functioning, either physically or financially, had no sinecure. Mr. Graham came to Bangor in 1913 and in the intervening years has won recognition as an outstanding citizen of eastern Maine.

Our pin in the northwestern corner hits Puget Sound Power & Light Company whose president is Frank McLaughlin. He started his career as an office boy for Stone & Webster in 1912. His progress was

¶ "It *has become a tradition to look to the representatives of the utility companies to head up or help most of the worth-while civic undertakings which come along. Whenever you have a Community Chest drive or any similar fund-raising campaign, the utility people are in the front ranks. They are among the most active in chamber of commerce undertakings. They are 'kingpins' in the service clubs.*"

typical of men who worked with service organizations or holding companies. His first position of responsibility was with the Blackstone Valley Gas & Electric Company as assistant manager in Woonsocket, Rhode Island. He was moved from time to time to more important jobs in various parts of the country, including many different assignments in such scattered areas as Texas, Louisiana, Virginia, and Massachusetts.

He became president of Puget Sound Power & Light Company in 1931 and has held that job through a period when his company has been in the front trenches of the battle against the encroachment of public power.

Our southwestern pin goes into San Diego Gas & Electric Company, and its president, E. D. Sherwin, provides the perfect example of the man who rose to the top of the company on a step-by-step basis. He was first employed by the San Diego Company in 1920 in the engineering department and served as chainman, surveyor, inspector, and estimator. In 1923 he was appointed assistant superintendent of electric transmission and distribution. His successive assignments were as assistant superintendent of electric production, assistant to the general superintendent, assistant general superintendent, general superintendent, and vice president in charge of operations. He was elected president in 1951.

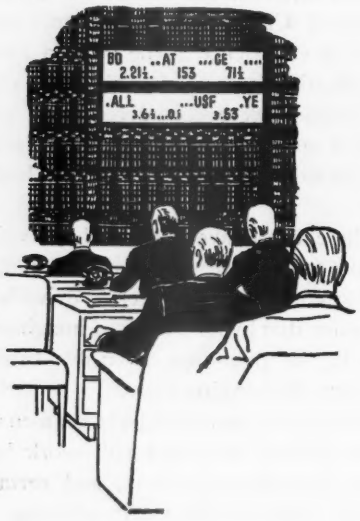
Let's put the southeastern pin in Florida Power Corporation at St. Petersburg, whose president is Bill Clapp. The story of his selection for the top spot is interesting. A predecessor with an unusually strong personality retired without clearly established lines of succession. A considerable period elapsed before a definite selection was made. The ultimate choice of Clapp, who had twenty-seven years of experience in the Florida Power organization, was made only after other possibilities were considered, and when he was selected his colleagues acclaimed him as well worthy of the post of leadership.

These men I have mentioned are typical. I have taken time to tell a little of their backgrounds because I seek to drive home the point that by no stretch of imagination can they be given tags of "utility barons" or other disparaging titles.

Utility company presidents are men who have worked hard and still work hard. They have been builders, and certainly neither their temperament, training, nor experience would influence antisocial attitudes on their part. Utility company presidents of the 1955 model are sensitive to their obligations to their customers, their employees, and their stockholders. No, this group does not fit into the picture of "the utility interests." We must look further.

The executives of a utility company report to the board of directors and, in the last analysis, the directors assume responsibility for policies and decisions. Perhaps these people constitute "the utility interests." Most boards include some of the top executives, although they usually constitute a minority. The folks we want to look at closely here are the outside or nonmanagement directors.

These outside directors are drawn most frequently from representative business and professional men in a company's territory. Because the service rendered by a utility enterprise is so basic to community



Diversity of Stock Ownership

"In nearly all companies stock ownership is widespread. There is a large body of stockholders and the maximum number of shares held by any one holder is almost always a very small percentage of the total. A geographical breakdown of stockholders of a company of substantial size shows all or virtually all of the 48 states represented, as well as some of the foreign countries. This kind of a setup does not lend itself to collaboration, certainly not the nefarious plotting attributed to 'the utility interests.'"

welfare, these men often accept directorates in the same spirit in which they would consent to act as trustees of local philanthropic or civic organizations. Such individuals are community-minded. They depend for their own livelihood on the patronage and continuing good will of the people in the cities where they reside.

For men of this type, sitting on the board of directors of a public utility company is just "one iron in the fire." That does not infer that they treat their responsibilities lightly, but it does mean that they have other interests which are more important to them—especially more important to their own personal exchequers. These men, in their capacities as utility directors, would not or could not put their stamp of approval on any policies or programs which would not be for the best interests of the area where they make their homes.

It is perhaps using the negative approach to say that the instinct of self-preservation would dictate that these directors avoid sponsorship of any moves which would incur the enmity of the citizenry. The positive approach would be to emphasize that the directors of the sort we have been discussing are high-type citizens who want their communities to thrive and prosper. They would not act prejudicially to the communities' best interests.

Well, if we cannot fit the directors into the concept of "the utility interests," maybe we should go back of them and conduct our search among the stockholders. I will cheerfully concede that thirty years ago there were stockholder groups who answered the description of "the utility interests." These were people who played with utility properties as with

chessmen on a board and always for their own profit. The passing of the Public Utility Holding Company Act of 1935 put an effective end to the abuses which had grown up in the twenties and anybody who thinks that folks can now play fast and loose with utility properties is just living in the past—in fact, the rather remote past.

Who are the utility stockholders of today? Since I am rounding out thirty years in the investment business and have specialized in public utility securities, I think that is a question I can answer. In nearly all companies stock ownership is widespread. There is a large body of stockholders and the maximum number of shares held by any one holder is almost always a very small percentage of the total. A geographical breakdown of stockholders of a company of substantial size shows all or virtually all of the 48 states represented, as well as some of the foreign countries. This kind of a setup does not lend itself to collaboration, certainly not the nefarious plotting attributed to "the utility interests."

LOOKING a little more closely at the individual stockholders, I can testify that, by and large, the purchasers of public utility stocks represent a conservative segment of the investing public. This assertion stands whether we are talking about individuals or institutions. The very nature of utility stocks precludes their use by the speculator who feasts on large capital gains.

Income and a relatively good degree of security are offered by utility stocks. The issuing companies operate under regulation which puts a ceiling on earnings and thus effectively circumscribes the profits which may be realized by the purchasers. The temperament of the average utility stockholder is such that he is willing to accept this ceiling on earnings which is imposed by regulation because it is accompanied by a floor under the earnings—something that is absent in unregulated enterprises.

FREQUENTLY, a stockholders' analysis reveals more women than men. Widows, housewives, schoolteachers, and others feel "safe" in utility stocks.

Institutional investors are increasingly important factors in the market for utility shares. Again, the stocks are bought for dependable income with opportunity for modest value increments over a period of time.

Certainly the insurance companies, pension funds, colleges, hospitals, trust companies, and other institutions are not making their purchases to dictate policies. On the contrary, most officials of these organizations avoid studiously giving the impression of injecting themselves into managerial matters.

I am afraid we have to conclude that the stockholder group is not the answer to our quest for "the utility interests."

About the only people left to talk about who are tied in with the utility industry are the consumers. To even suggest that they make up "the utility interests" is to evoke lusty laughter. For when we talk about the consumers of utility services we probably come as close to rounding up the whole populace of the country as we could in any one group.

Certainly the utility consumers are not the "privileged few." If we were talking about the people who drive Cadillac automobiles, eat caviar, or buy imported wines,

we might conceivably have a chance of proving something, but certainly utility consumers take in just about everybody.

SERVICE is used by the rich and poor alike. In that connection I recall the amazement of fellow commuters on the New York Central when television aerials sprouted from the roof tops of Harlem tenement buildings before they had become commonplace on the dwellings of the more prosperous.

No need to take time to labor my point about utility consumers. Unfortunately, however, that leaves me at the end of my rope with no particular place to go.

Accordingly, I am afraid I must wind up my article with the same question with which I started: "Just who are 'the utility interests'?"

Putting "Mental-Lurgy" to Work

"LEADERSHIP, as all of us know, is a job that, once assumed, entails responsibilities far beyond the call of routine duty. It is with us twenty-four hours a day, and unless we give it 24-hour attention, our production of 'off heats' will get out of hand.

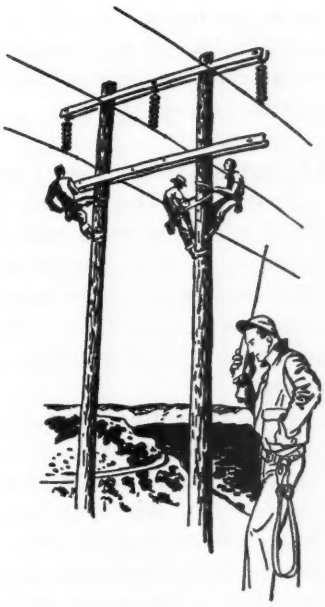
"It will be through the ability of steel men to be expert 'mental-lurgists' as well, that we shall prove finally that private enterprise can meet the challenges before it. We must give evidence that we are vitally interested in obtaining the full support and co-operation of our employees and management people. And this is where business leadership in the days ahead will meet its most crucial test.

"As close as we are to the human scene, we have allowed others to speak for us too often in matters vital to the successful performance of our jobs. Many of us recall not so many years ago when we were divested of a long-recognized right—when we were literally denied the opportunity to exercise what we have always regarded as a responsibility in giving sound leadership and counsel to employees. The employer is the natural leader of his employees and always will be despite academic beliefs and doctrinaire teachings to the contrary.

"There is another area wherein affirmative leadership is necessary, and that is in building a better understanding of our national economy among the members of business and industry. We need more frank and basic discussion in defense of private Capitalism—not in terms of bathtubs and washing machines, but in terms of sound fundamentals.

"Our people need to develop a stronger realization that money is useful only as it retains its potential to command goods and services, and anything which detracts from this potential lessens the value of that money. Our people need a better understanding of the elusive word 'security.' They need to know that security cannot be guaranteed at the bargaining table any more than it can be bought with taxes. The only real security the world has ever known is the product of honest effort and the ability, manifested in our way of life, to produce more at less unit cost to the end that our economy can be maintained on a healthy growing basis."

—CLIFFORD F. HOOD,
President, United States Steel Corporation.



The Trinity River "Partnership" Project

The Trinity river project in California is among those being proposed for so-called "partnership" development under the policy of the Eisenhower administration encouraging both public and private interests to participate, as well as the federal government.

By JANE ESHLEMAN CONANT*

When President Eisenhower employed the word "partnership" in his State of the Union message last January, he was using language which struck a responsive chord among the nation's private enterprise public utility companies. The President said:

> This administration believes that achievement of the resource development basic to the economic progress and security of the nation requires encouragement of local public and private initiative and, where federal participation is necessary, emphasis on the partnership aspects of essential co-operative arrangements with state and local governments or with private enterprise.

Pacific Gas and Electric Company, which provides the power, gas, and light for most of northern and central California, not only agrees with him but has a firm "partnership" proposal which goes right along with his ideas. It involves the power development made possible by a water conservation project on the Trinity river in the high and rugged northern Cali-

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fornia mountains. It demonstrates just how valuable such an arrangement can be, to the federal government and to the citizens most closely affected.

"PARTNERSHIP" is not a new story to PG&E. The company has co-operated for many years with the federal government, local irrigation districts, cities, and other public agencies in the development and storage of water and the generation and distribution of electric power.

Trinity is a case in point.

The plan, like many things in California, is on a big scale. It contemplates diverting water from this full-flowing stream through more than 16 miles of tunnels into the great Sacramento river—a priceless flow of irrigation water going to farmers instead of dumping itself uselessly into the sea.

The Bureau of Reclamation has outlined a plan for this monumental water diversion, with correlated hydroelectric power facilities. PG&E has offered an alternative, partnership program, under which it would build and operate the power phase of the project.

The company lines up the proposals side by side and shows that its own suggestion offers firm supporting evidence for Mr. Eisenhower's partnership policy.

In brief, the company plan would save the federal government about $50,000,000 outright, in construction costs alone. Beyond that, the company would pay Uncle Sam $3,500,000 a year for the use of falling water through the Trinity plants. That is calculated to be its full value based on the alternative cost of steam power. It is equivalent to $4.50 for each acre-foot of water diverted through the plants—water which is not consumed, but is sent on downstream for irrigation purposes. Farmers pay $3.50 an acre-foot for firm irrigation water from the Central Valley project, and they use it up in the process.

MORE than that, the company's installations would give the federal government $1,400,000 a year in taxes, and local governments, $1,300,000. All this money would be lost to the taxpayers without the partnership arrangement. Over the project repayment period, it would amount to $171,000,000 in savings for the American public.

On the national level, this adds up to good business. On the local scene, it would have even more dramatic meaning, for instance in Trinity county alone. In that mountainous and sparsely populated area, the plan would triple PG&E's county tax payments. The annual total would be $325,000 a year—not a great figure in contrast with some national budget items, for instance, but, for Trinity county, an amount representing 44 per cent of all the taxes it levies. In neighboring and somewhat bigger Shasta county, the annual PG&E tax bill would be almost $2,900,000, a meaningful amount in terms of schools, health services, and other community uses to which the county would assign it.

Even more important to rapidly growing California, under the company plan the power plants would be of 362,300 kilowatts capacity, as contrasted with 233,000 kilowatts proposed by the bureau. Of this 129,300 kilowatts of added generating capacity in the company plan, there would be a net increase of 65,000 kilowatts in dependable capacity. That, of course, is because PG&E would integrate the Trinity

power in its own system, thus being able to use the energy to best advantage through system-wide adjustments of power flow. In addition, there would be a 5 per cent increase in the amount of water available to farm users in the central valleys, for whose benefit the entire plan was originally envisioned.

IN all this, PG&E's plan matches up accurately with the President's State of the Union statement that "to the greatest extent possible, the responsibility for resource development, and its cost, should be borne by those who receive the benefits." It checks out right down the line, too, with his feeling that "in many instances, private interests or state and local governments can best carry on the needed programs."

PG&E is an old hand at this sort of partnership arrangement. In many instances, by contracting to purchase the power output, it has provided an assured market for electric power generated by public irrigation and water supply projects and thereby has aided in financing their construction. In others, it has constructed the power facilities at federal or other public agency irrigation and flood-control dams. For instance, it put up the power plants at the Narrows dam built by the U. S. Army Engineers on the Yuba river, at the Melones dam of the Oakdale and South San Joaquin Irrigation districts on the Stanislaus river, and at dams of the Nevada Irrigation District on the Yuba and Bear rivers. Under partnership arrangements with these agencies, PG&E payments for the use of falling water released from the dams through company power plants have made a substantial contribution toward repayment of the costs of constructing the water projects.

PG&E believes in co-operation between public and private agencies in the generation and marketing of power developed at multipurpose plants. And, as in the past, its Trinity proposals along these lines have won considerable public support. When the Trinity plan came before Congress in April, some 130 organizations such as chambers of commerce, farm groups, and county boards of supervisors were on record in formal resolutions favoring the partnership program. One observer, C. Lyn Fox, political editor of the San Francisco *Call-Bulletin,* wrote:

> The proposal . . . should have a strong appeal to those who want to see the government keep clear of the field of legitimate private enterprise and at the same time save the taxpayers a lot of money.

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¶ "PACIFIC GAS AND ELECTRIC COMPANY, *which provides the power, gas, and light for most of northern and central California . . . has a firm 'partnership' proposal which goes right along with his* [*the President's*] *ideas. It involves the power development made possible by a water conservation project on the Trinity river in the high and rugged northern California mountains. It demonstrates just how valuable such an arrangement can be, to the federal government and to the citizens most closely affected.*"

That is a succinct summary. In detail, the Trinity project is the story of an engineering adventure, and of two different ways of going about it.

The Trinity is a handsome stream in the northernmost part of California, a section not yet heavily invaded by the huge influx of post-World War II population. The river is highly regarded by fishermen; it runs through high mountains, westward into the Pacific ocean.

IN California, every drop of water is precious. This is particularly so because the great agricultural regions lie in the long north-south valleys between the Coast Range and the Sierra Nevada. These are the valleys for which the bureau's Central Valley project is providing a big water-interchange system for irrigation, and where, for the most part, only a little rain falls each year.

Therefore, a stream like the Trinity, though beautiful and generous to anglers, does not fit into the economic scheme of things as long as its water runs waste to the sea. Engineers have long thought of diverting part of its flow into the Sacramento river basin and thence to the farmers who can use it so well on their dry lands.

The Bureau of Reclamation has proposed to do this by building a set of dams and tunnels to trap Trinity water and divert a portion of it through the rugged Trinity mountains to the Sacramento river at a point near Shasta dam. Naturally hydroelectric power development would go along with such a plan. The dams and tunnels would provide forceful falls of water ideally suited to turn the turbines of hydroelectric plants. The bureau proposed to build these power facilities.

PG&E declares it can do the power job better.

THE total construction cost to the taxpayers for the irrigation and power facilities would be $219,066,600 under the bureau's combined water conservation and power generation plan. If PG&E were to build the power facilities, the federal cost would be $169,587,600, or a saving to the public of $49,479,000.

The bureau program calls for four power plants—Trinity, of 90,000-kilowatt capacity; Lewiston, 2,000; Tower House, 66,000; and Matheson, 75,000. PG&E proposes plants at the same sites, but with 129,300-kilowatt added capacity. The company would build the Trinity plant with the same 90,000-kilowatt rating, but Lewiston with 2,300, Tower House with 126,000, and Matheson with 144,000.

To do this, the great tunnels carrying the water through the mountains would have to be bigger than those proposed by the bureau. The 8.25-mile Tower House tunnel would have a 14.6-foot diameter under the bureau plan; PG&E would have it 17.5 feet from wall to wall. A similar increase would be made in the size of the Matheson tunnel, 8.67 miles long. This would provide not only for the greater hydroelectric power production, but also for a greater flow of irrigation water to the thirsty valleys.

The tunnels would be 20 per cent bigger under the company plan—but that much increased size would provide for 80 per cent more peaking capacity.

IT would cost Uncle Sam $9,329,000 more to build these bigger tunnels than those of the bureau's specifications. For instance, Tower House tunnel is budget-

CONSTRUCTION COST, TRINITY RIVER PROJECT-PHYSICAL DATA

	Original USBR Plan		*Partnership Plan* *By USBR*	*By PG&E*
Federal Capital Cost	$219,066,600		$169,587,600	($49,479,000) (Federal Saving)
Power Summary:				
Total Installed Capacity (kw)	233,000			362,300
Total Dependable Capacity (kw)	192,000			321,000
Average Total Annual Energy (mil. kwh)	1,072			1,108
Physical Features:				
Trinity Dam and Reservoir				
Dam Height (ft.)	450		450	
Reservoir Capacity: Maximum (A.F.)	2,500,000		2,500,000	
Minimum (A.F.)	490,000		490,000	
Reservoir W.S. Elevation: Maximum (ft.)	2,380		2,380	
Minimum (ft.)	2,188		2,188	
Tunnel: Diameter (ft.)	31		31	
Length (ft.)	1,200		1,200	
Capacity (c.f.s.)	3,525		3,525	
Trinity Power Plant				
Penstocks: Number	3		2	
Diameter (ft.)	10		11	
Length (ft.)	1,000		1,000	
Capacity (c.f.s.)	3,525			3,525
Static Head: Maximum (ft.)	439			439
Minimum (ft.)	247			247
Power Plant: Number Units (Capacity 90,000 kw.)	3			2
Lewiston Diversion Dam				
Dam Height (ft.)	140		140	
Reservoir Capacity: Gross (A.F.)	45,000		45,000	
Active (A.F.)	2,000		2,000	
Reservoir W.S. Elevation: Maximum (ft.)	1,942		1,942	
Minimum (ft.)	1,940		1,940	
Lewiston Power Plant				
Penstock: Number	1		1	
Diameter (ft.)	5.2		5.2	
Length (ft.)	150		150	
Capacity (c.f.s.)	300			300
Static Head: (ft.)	103			103
Power Plant: Number Units	1			1
Installed Capacity	2,000			2,300
Tower House Tunnel				
Diameter (ft.) (Length 43,600 ft.)	14.6		17.5	
Capacity (c.f.s.)	1,700		3,130	
Tower House Power Plant				
Penstocks: Number	1	3	2	
Diameter (ft.)	12.2	7.5	11.5-12	
Length (ft.)	1,430	300	1,730	
Capacity (c.f.s.)	1,700			3,130
Static Head: (ft.)	638.5			638.5
Power Plant: Number Units	3			2
Installed Capacity (kw)	66,000			126,000
Matheson Tunnel				
Diameter (ft.)	14.6		17.5	
Length (ft.)	45,700		45,700	
Capacity (c.f.s.)	1,700		3,130	
Matheson Power Plant				
Penstocks: Number	1	3	2	
Diameter (ft.)	12.2	7.5	11.5-12	
Length (ft.)	2,260	300	2,560	
Capacity (c.f.s.)	1,700			3,130
Static Head (ft.)	722			722
Power Plant: Number Units	3			2
Installed Capacity (kw)	75,000			144,000
Transbasin Diversions: Ave. ann. A.F.	728,000			771,000

ed by the bureau at $30,355,000; PG&E's recommended bigger bore would cost $34,390,000. Matheson tunnel would cost $31,246,000 as the bureau envisions it; under the company plan the price would be $36,540,000.

However, this increase in tunnel cost is small in comparison with the taxpayers' saving if PG&E builds the power facilities. Over all, the net reduction in federal construction costs is about $50,000,000. For instance, the bureau proposes to pay $12,828,000 to build the Trinity power plant; it would cost the taxpayers nothing if PG&E put it up with its own capital. Lewiston power plant would cost $667,000; Tower House power plant, $7,592,000; Matheson power plant, $6,942,000. All this would be saved the public under the company proposal.

Transmission lines costing $19,025,000 also would be taken off the government bill. The company would build switchyards and substations for which the federal burden otherwise would be $11,131,000, and other savings would amount to $623,000.

THAT'S the cash-on-the-line economy phase of it. But even further, the plan's savings could be used to help the bureau finance other needed water projects, such as the San Luis canal and reservoir phase of the CVP. This is designed to furnish irrigation water to the dry west side of California's San Joaquin valley.

For instance, if CVP power plants are to supply the energy for the San Luis pumps, that will take about 290,000 kilowatts from the CVP dependable capacity. PG&E, as part of its Trinity partnership proposal, is willing to supply power from its own system for San Luis pumping on an exchange basis. Any deficiencies in available CVP power could be supplied by delivery of off-peak energy generated by PG&E plants, and the only charge to the bureau for exchange power would be for transmission from Tracy, the switching point. PG&E has made this pledge:

> We guarantee that such charge would be less than the cost to the government if the bureau undertook to build transmission lines to the pumps.

The Trinity plan calls for some giant-scale construction. The first dam, 450 feet high, would create the Trinity reservoir of 2,500,000 acre-feet capacity, in the upper reaches of the stream, with a maximum water level at 2,380 feet above sea level. At this dam would be the 90,000-kilowatt Trinity power plant.

DOWNSTREAM a bit would be the Lewiston diversion dam, 140 feet high, capable of trapping 45,000 acre-feet of water with the average water surface at 1,941 feet. The Lewiston power plant would be built there, with 2,000-kilowatt capacity under the bureau plan and 2,300 kilowatts if built by PG&E.

From there, the Tower House tunnel would carry the water 8.25 miles under the mountains to Tower House power plant, with 66,000-kilowatt capacity as proposed by the bureau or 126,000 under the company plan.

Tower House diversion dam would be 48 feet high, with its normal water surface at 1,302 feet altitude. From there another big tunnel—the Matheson, 8.67 miles long—would take water to the Matheson power plant. This one would have 75,000-kilowatt capacity if built by the bureau; 144,000 as planned by PG&E.

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And after that the water would run into the Sacramento river midway between the bureau's Shasta dam and Keswick powerhouse—then, finally, on to the farmers.

THIS PG&E partnership plan is one for which there is already legislative precedent. Last year, Congress canceled a federal project on the Coosa river in Alabama to permit the Alabama Power Company to build five dams at a cost of $100,000,000. Congress also gave Public Utility District No. 2 of Grant county, Washington, the right to build a power facility at the Priest Rapids dam to be constructed by the federal government. And the state of Oklahoma and the federal government were permitted to enter a partnership to build the Markham Ferry dam.

PG&E proposes the Trinity partnership on the regular terms, under a 50-year license from the Federal Power Commission. Distribution of Trinity's electric power to the people of northern and central California through the PG&E system would, of course, be regulated by the California Public Utilities Commission.

The company points out that its customers pay 15 per cent less today for each kilowatt-hour of electricity used in their homes than they did in 1939. The company says:

> Despite the fact that about 25 cents out of every dollar collected by us is paid out in taxes, we have preserved this low rate level by sound engineering and efficient management. Trinity power would be sold by the company at the lowest possible rates consistent with truly sound business principles.

In April, PG&E representatives, led by Robert H. Gerdes, company vice president and general counsel, made a forceful presentation of the Trinity facts to the House of Representatives' Interior Committee's Subcommittee on Reclamation. Congressional judgment was deferred at that time. Though sentiment in Congress was favorable to Mr. Eisenhower's partnership idea, Committee Chairman Clair Engle, Democratic Representative from Red Bluff, California, indicated he still prefers the bill he has sponsored, calling for all-federal construction of the entire Trinity project. He spoke of the Trinity plans in terms of a "public *versus* private power fight."

But Gerdes and PG&E told Congress plainly that the partnership plan will make possible the earliest construction of needed water conservation works in California "with the least cost to federal taxpayers and with maximum benefits to the water users."

And as PG&E Attorney William B. Kuder said in a recent talk to a group of northern California businessmen:

> Power is our business and we have the responsibility of serving a big and growing area. Trinity power would have its greatest value if it were tied in with our regional system which serves northern and central California. And we would pay full value for the falling water used through our plants on Trinity.
>
> Our company, backed by more than 100 years of experience in the public utility business in California, can best carry on the program of developing Trinity power to provide maximum benefits to taxpayers and water users in California.

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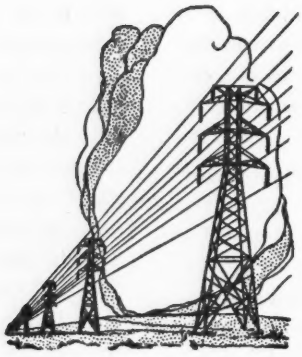

The Electric Industry Keeps Pace with Demand

This is an interview with Clarence W. Mayott, nationally known power planning engineer, now a consultant of the Hartford Electric Light Company. It deals with the question of what the electric industry has been doing to keep pace with the constantly increasing demands of the public for more and better electric service. This article was the result of that interview.

By T. E. J. KEENA*

I TOOK a look the other day at the changes wrought by a half-century in the way that electricity can be summoned at finger-tip control.

In one day, I walked through three different plants where the humming giants of power lie. One plant was built in 1904; another in the twenties; the third was opened late last year.

Tremendous strides have been made in these recent years. The engineers are squeezing more heat out of a pound of coal to drive the generators. They're sending more electricity over better and safer lines to do more jobs.

My trip was on a course that might be typical of most parts of the United States. Everywhere the utilities are building new installations to provide power and supplanting older facilities that are proving uneconomical in these days of higher fuel costs.

THE trip came as part of a talk I had with one of the nation's leading authorities on electrical engineering and power system co-ordination. Clarence W. Mayott today is retired and a consultant to the president of the Hartford Electric Light Company. For twenty years he managed and helped develop a system that put the electric power of five states at the service of consumers of any of those states. In World War II he was called to

*Editorial department, *The Hartford Courant*, Hartford, Connecticut.

Washington to administer a similar pool of power in thirteen southeastern states.

He joined the Hartford Electric Light Company in 1911, after graduation from Rensselaer Polytechnic Institute. His first assignment was to the company's Dutch Point plant.

"When the company built Dutch Point, it was one of the most modern in the country," he remarked. "We had 10 boilers there, six turbines, and we produced 15,000 kilowatts. In Middletown last year we put up a plant with one boiler and one turbine and we produce 72,000 kilowatts. And this is just about the smallest capacity that will go in anywhere from now on."

Why? Because the nation has demonstrated an insatiable appetite for electric power. The load and the ability of the nation's electric companies to handle it have more than doubled as new and more powerful lights went on all over the country; automatic devices powered by electricity did the work of housewives and the industrial and commercial economy of the United States swelled.

As the demand has increased, engineers have worked to make plants more efficient. It has been a combined effort, with the engineers of the industry working with the manufacturers to design new and better units.

"The whole thing is a matter of teamwork," Mayott explained.

One way of measuring the results in efficiency is in a system known as British thermal units per kilowatt-hour. That is the heat rate necessary to produce electricity. There has been a marked improvement since 1948. It has been produced by the installation of modern equipment and the reduced operation of older plants.

It was in the discussion of this that Mayott suggested I take a look at Dutch Point and compare it with newer plants. Dwight Douglass, vice president of the Connecticut Power Company, came along with me.

Dutch Point station was built in 1904 to house the company's turbine generator in a site on the banks of the Connecticut river. Up to then this generator had been installed in the center of Hartford, on the site of what is now the company's main headquarters. There it first was designed to provide power for 21 arc lamps in the old Hartford railroad station, a few hundred yards away. This year, the newest source of power for Hartford is 20 miles outside town, to the south of the city.

The area for the Dutch Point station when it was new consisted of 4.5 acres. Its riverside location was considered ideal to get plenty of water for condensation purposes. Today the site has been whittled down, hemmed in by downtown Hartford, squeezed between the river and the busy Conland highway that is an approach to the Charter Oak bridge.

You have to poke your way through bridge stanchions to reach the brick generating station. Only little heaps of coal stand outside now, but there is evidence of the original crude coal-handling methods, including cranes, that kept the fires going.

Long years of hard work have left the interior relatively dark. You peer over a railing at the lower level where the pumps and condensers are located. The level is crowded with equipment. "Today those same elements in the process of making steam are spread out over greater floor

space," Douglass explained. "We borrowed some of the original designing from marine practice, where everything was crowded into tight ship's engine rooms."

One of the turbines is being dismantled. You learn that the entire station now is only on a stand-by basis, in reserve in case of emergency.

It was the demand of World War I industry that spelled the need of more capacity than Dutch Point could ever meet. So, in 1920, the company began to build its South Meadows plant. It's just a mile or so farther south on the bank of the Connecticut. It, too, is hemmed in in 1955, between the city's old airport, bridge approaches, and a regional market.

In thirty years, five additions were made to the original plant, to bring its capacity up to 235,000 kilowatts, almost seven times what Dutch Point could produce. Yet at the same time, more efficient plant was to husband man power so that less than twice as many men are needed at South Meadows as staffed the Dutch Point station.

Attention to personnel is a trend that is called to your notice even before you enter South Meadows. A brick building has been constructed near the gate to provide personal facilities and relaxation quarters for employees away from the steady hum of the generators and the dirt of the coal pile.

The coal pile itself is ten times as high as it was at Dutch Point, with bulldozers working on it to muscle the fuel into a conveyor system that will trundle it high into the air to the start of the steam process. But the coal pile shares notice with fuel oil tanks, sitting stolidly near by. In the 1930's, the company made oil an alternate source of fuel. Today a few simple changes can switch any fire from coal to oil or back.

Inside the plant, ten stories high to house the huge boilers, there are more light and space. The giant generators hum away in a vaulted room, at the end of which the plant's output is constantly clocked in large lighted figures on the wall.

There are many new facilities. A small chemistry laboratory is maintained, to test the water with which the steam is made, and for other purposes. Ever since high pressures began to matter, when the pressures approached 400 pounds per square inch in the 1930's, the purity of the water pumped in has had to be guarded.

High over the main room, the company's switchboard controls the supply of electricity for an area of 245 square miles,

¶ "While *the basic generation and transmission of electricity have seen constant improvement in the struggle for efficiency, other changes have also been made in the refinement of processes. Take just the matter of supply of current to a manufacturer. Frequency now is kept close to a prescribed level. With new and modern machinery—and these days the use of electronics systems and automation is growing—a manufacturer cannot afford to have his motors change speed suddenly.*"

with a population of 300,000 people. Dials and charts keep track of the power flow. Dispatchers can cut off or send more energy through 700-odd miles of wires or cables.

It was during the lifetime of this South Meadows plant that the interconnection of power systems in New England was developed. In the switchboard and instrument room are the controls necessary to regulate power flow into substations and over transmission lines to anyone in need.

The boiler and gauge boards, in another part of the plant, also show radical changes. They had been bulky affairs at Dutch Point. Now knobs have replaced levers. Many more dials and indicators permit closer inspection of equipment and observation of meters, instruments, gauges, and thermometers.

FROM the South Meadows plant, its brick exteriors presenting an imposing sight, my trip went down the Connecticut valley 20 miles to an isolated area south of Middletown. There last year the company built the first unit of its Middletown plant. The development program contemplates an eventual station of the order of 500,000 kilowatts generating capacity.

The site is isolated from the crowded central Connecticut industrial areas that it serves. It has good transportation facilities and a good river supply of cooling water for condensing purposes.

Middletown started with one 66,000-kilowatt turbogenerator designed to operate at 1,250 pounds per square inch pressure and 950 degrees Fahrenheit temperature without reheat.

("When I came to Hartford in 1911," Clarence Mayott had said, "a steam boiler could generate 150 pounds pressure. That was high pressure then, the best we knew. By 1916, it was up to 200 pounds pressure.")

The Middletown plant was designed to meet the needs of the Hartford Company and the Connecticut Power Company, which consider themselves comparatively small, investor-owned, public utilities. Elsewhere in the country much larger plants are in use or under construction. But the efficiencies built into Middletown are fairly typical. They guarantee that the new turbogenerator will produce a kilowatt-hour with only three-quarters of a pound of coal. Some of the equipment still in the Hartford system, if not in present use, needs better than two pounds of coal per kilowatt-hour.

THE Middletown plant is even different in appearance. It is not covered with brick, but with metal sheeting, and can be expanded easily when the time comes to add new units. Inside, its walls and even the generator itself are light green, to afford more restful colors for those who work there. The generator is bigger, too, eight feet longer, two feet higher, and three feet wider than the last generator installed at South Meadows, and about 40 per cent heavier.

The boiler, too, is bigger, and the building that houses it rises twelve stories above the river. There's been a significant change in construction of these boilers over the years. The ones I had seen at Dutch Point were made of ordinary steel. The Middletown installation uses new alloys and metals not even known in 1904. They were developed out of necessity, by industry engineers working in co-operation with manufacturers, to meet the tests of higher pressures and temperatures.

Steam Still Reigns in Power Making

"THE backbone of the power business continues to be in steam-generating plants. . . . The size of steam units has increased from around 50,000 kilowatts to over 300,000 kilowatts. Steam stations with a size of up to one million and a quarter kilowatts are under construction. The improving heat rates have been attained through bigger units, higher temperatures, higher pressures, and greater knowledge of equipment. The increased importance—and cost—of labor per unit, and the increased cost of plants per kilowatt have helped dictate the decision to build larger plants for greater efficiency."

New England weather being what it is, the biggest part of equipment is housed. But there is a trend in the industry to house only essential items of equipment. That saves on construction costs. Inside the plant now go better facilities for the employees, glassed-in rooms from which to keep check on the equipment, showers, locker rooms, places to eat and chat and read. An electric stove has been placed around a corner from the main control room, so that duty employees can keep hot coffee at hand.

The control room itself shows improvements. Two men can control the output of 150,000 kilowatts (anticipating a second unit to be added). The panels are almost push-button affairs, now, rather than knobs. The meters and indicators do more jobs, within closer tolerances.

THREE main trends stand out in comparison of these three plants. The first is the conservation of man power. Comparing Dutch Point with Middletown, Mayott commented:

> We had as many men with the 15,000 kilowatts as they have with 72,000. But remember, we needed that many in that day to get the job done.

Douglass puts it another way. Dutch

Point had about three employees per thousand kilowatts. South Meadows worked out to about one man per thousand kilowatts. When Middletown gets into stride, there'll be about one man for every 2,000 kilowatts. And some plants in the country are scaling their efficiency at one man per 4,000 kilowatts.

"These days you get much more benefit from man-hours than you used to," Douglass pointed out. One result of the improved use of man power has been to call for greater skills and more training.

"The man who worked in the boiler room in 1911 pushed coal and watched the water gauges and pressure gauge," Mayott said. "Then the fireman was a laborer. Today he's a highly skilled expert. He does no shoveling or pushing coal. He's watching instruments and pushing buttons."

A second major trend has been in the conservation of fuel. New alloys have made it possible to go to higher temperatures and pressures. New burning equipment has made it possible to use coal and oil more efficiently and change from one to the other with ease whenever the price warrants. Fuel costs are one of the highest factors in electricity costs. Only through constant improvements and economies can rates be held down.

Right now, the industry is looking to a new fuel—nuclear material. As a source of heat, it has been developed to the point where serious consideration is being given to its general use, Mayott pointed out. One plant is under construction at Shippingport, Pennsylvania; others are being discussed.

ALL these changes have come about as the industry has seen its load—and the ability to carry it—increase. That growth is what Mayott considers the most significant development in the industry's last twenty-five years.

"The most important thing, of course, is service," he said. "We've had to be ready to pick up the load as it increased through the use of more appliances, through the building of more homes. Look around your kitchen. How many appliances are there that weren't there several years ago, or in your mother's day?"

He went on to list other major changes. A third trend has been in co-operation and co-ordination between electric companies. They have interconnected their power lines to make use of the most economical sources of power supply.

The New England system is a case in point. Hartford can get help, if it has to, from as far away as Washington, D. C., or Niagara Falls, New York. The original power lines from Hartford to Agawam, Massachusetts, in this net were operated at a voltage of 66,000. Now they are part of a 115,000-volt system that covers New England and New York state. One section from Tewksbury, Massachusetts, to Comerford, New Hampshire, operates at 220,000 volts.

In Connecticut, co-operation has led to a basic pooling policy on future generating capacity. Four companies have agreed to relate new generating units to over-all requirements in respect to size and location. By providing an equalized reserve, the policy will lead to savings in investment and energy costs, as larger and more economical units can be installed under it than could be handled on a local company basis.

THE backbone of the power business continues to be in steam-generating

plants. Eight times as much thermal capacity is being installed as water-power capacity.

Equipment has been designed to produce steam at a temperature of more than 1,000 degrees Fahrenheit and pressure of 2,400 psi and over. The size of steam units has increased from around 50,000 kilowatts to over 300,000 kilowatts.

STEAM stations with a size of up to one million and a quarter kilowatts are under construction. The improving heat rates have been attained through bigger units, higher temperatures, higher pressures, and greater knowledge of equipment. The increased importance—and cost—of labor per unit, and the increased cost of plants per kilowatt have helped dictate the decision to build larger plants for greater efficiency.

The electrical industry, for example, has plans to install some 34,000,000 kilowatts of energy in the next three years, to 1957. Only 3,000,000 kilowatts of that total will be furnished by plants of less than 60,000 kilowatts capacity. And one plant, being built by Detroit Edison, will be composed of a 300,000-kilowatt unit with one boiler.

"Of that total," Mayott said, "7,000,000 kilowatts will be furnished by plants of 70-100,000 kilowatts; 4,500,000 kilowatts by plants of 100-125,000 kilowatts; 7,000,000 by plants of 156,000 kilowatts; 5,000,000 by plants of 156-200,000 kilowatts; and 4,000,000 by plants of 200,000 kilowatts or larger."

The energy produced by these plants will be going out on transmission lines of greater capacity, too. Transmission lines are now being built for voltages of 350,000, Mayott noted. The dispersion of new generating stations to out-of-town locations, as well as the long distances that must be covered in some parts of the country, call for higher transmission voltages. Even in urban areas, the increased load is making it necessary to build up transmission of power to the districts where it will be used.

CABLES are in operation now at 220,000 volts. The great increases in load and the great increase in density of urban areas have made it necessary to increase the use of cables and their voltages.

So far, distribution systems have kept ahead of the load. The size of transformers has increased parallel with the greater load and the generators to supply it. Both in transmission and distribution there has had to be replacement of old systems with new materials and designs. The expansion of some systems has had to meet the rising costs of rights of way, particularly in urban areas, and of materials.

¶ "ELECTRONICS, *which has had one impact through increasing the load by the radio and the television, has also been put to use for electricity's own control system. It makes it possible to use the transmission lines as talking circuits, for the transmission of meter information and for the regulation of transmission line loading. What are possible future developments? Everyone expects the load to continue to grow. The country's thirst for electric power shows no signs of slackening.*"

While the basic generation and transmission of electricity have seen constant improvement in the struggle for efficiency, other changes have also been made in the refinement of processes. Take just the matter of supply of current to a manufacturer. Frequency now is kept close to a prescribed level. With new and modern machinery—and these days the use of electronics systems and automation is growing—a manufacturer cannot afford to have his motors change speed suddenly. Nor would the public accept variations in the conduct of their electric clocks, upon which they have come to rely widely.

"In the early twenties, it wasn't unusual to have variations of .5 of a cycle to one full cycle," Mayott recalled. "In 1925, the best frequency meter we had could only measure it as close as one cycle. Now we have electronic meters that can measure it to one-hundredth cycle. Year by year, month by month, the equipment is improving immeasurably."

The same progress can be seen in measuring the flow of power today by a directed radio wave that transmits meter indications to a central control point from wherever you choose to measure it.

In local transmission, "we have better methods today of controlling loads and relays than we did," Mayott said. "That's been very important with the increased loads. And we have devices that will interpret what happens on a short and will cut out the right line and quickly."

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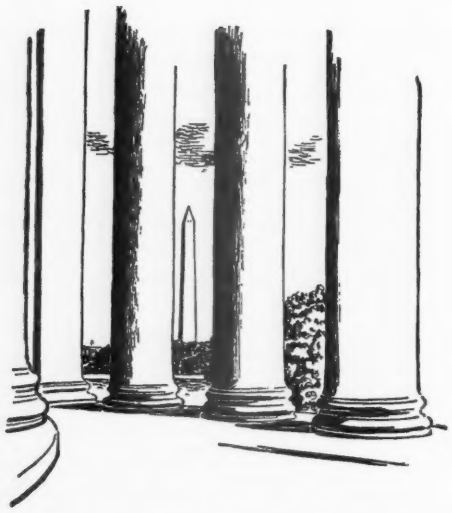
What are possible future developments? Everyone expects the load to continue to grow. The country's thirst for electric power shows no signs of slackening. To meet it, there will be bigger steam turbogenerators and bigger steam plants—some, perhaps, with heat supplied from atomic energy.

Many of these plants will be built well outside the cities they serve. But with the growth of urban areas, they will be subject to the higher costs of rights of way and other requirements. Most new plants —and older ones—are making steady progress in their fight on smoke emission. (The Middletown plant saw $400,000 spent to insure clean air to the surrounding community.)

Street lights, commercial lights, residential lights are all likely to improve. Older homes will be rewired to take advantage of new appliances. But, in the end, what people want in the way of electric power will really determine the future.

"After all," said Mayott, "the most important thing is service."



Washington and the Utilities

Hell's Canyon Brews Tempest

A RACE to head off any private company hydroelectric licensing on the Snake river in the Hell's Canyon area is now on in the U. S. Senate. It was touched off by the recent FPC examiner's decision recommending private development of the Hell's Canyon dam site in Idaho. Public ownership forces have already announced that they will appeal the examiner's decision to the full commission. In the meantime, the public power bloc in Congress is pressing for action on a bill to head off the FPC license by authorizing construction of a high federal dam in Hell's Canyon. Two previous Democratic-controlled Congresses have refused to authorize the project. The examiner recognized this, stating that it would be futile for the FPC to recommend the federal project, regardless of its merits.

A favorable Senate Interior Affairs subcommittee report on a proposed high federal dam project was a foregone conclusion, in view of the fact that three out of five members of the Senate committee were co-sponsors of the bill. They are Anderson (New Mexico), Jackson (Washington), and O'Mahoney (Wyoming). But it is not certain that the full committee would follow suit and even less certain that the Senate would approve by a floor vote. Over on the House side no plans had been made even for taking up the measure.

Only one of the three dams proposed by the Idaho Power Company would be licensed if the FPC examiner's decision is allowed to stand without change by the full FPC. This would be the $95,000,000 Brownlee project, which contains multipurpose features, including power. The other two dams—Oxbow and Hell's Canyon—might be considered at a later time upon a showing by the company of a market for the power. Construction of the Brownlee project would preclude construction of a high federal dam at Hell's Canyon.

The examiner's decision indicated that if the choice were between all three private company dam proposals and the federal single dam project, the latter would probably be preferred for licensing. But he supported his decision in this case on grounds that the unlikelihood of a federal

appropriation for the project would prevent any early power development on the Snake river. Counsel for Idaho Power Company said the recommendation was completely satisfactory to the company. A final FPC ruling by midsummer is expected.

Gas Bill Form Uncertain

THE House Commerce Committee on May 18th worked on a bill to decontrol producer prices of natural gas and hammered out an amendment designed to give consumers some protection. The amendment, approved by a 17-to-4 vote, would give the Federal Power Commission some control over price increases resulting from certain existing "escalator clauses" in producer-pipeline contracts.

The action nailed down a policy decision reached by the committee a week earlier. But members differed over whether the language of the amendment would allow the commission to retain a measure of control over prices paid producers at the wellhead.

The new provision would make it clear that pipelines would not get an automatic "pass through" of all price increases resulting from "escalator clauses." In all but two types of "escalator clauses," the pipelines could apply to the commission for only that portion of the higher price paid producers which would not exceed a "reasonable market price."

Chairman J. Percy Priest (Democrat, Tennessee) said that a clarifying amendment may be necessary to assure that pipelines are not squeezed by having to pay producers more than the commission would allow them to pass through to distributors. Representative Oren Harris (Democrat, Arkansas), author of the bill, did not think that would be necessary. He thought that pipelines could protect themselves through renegotiation of contracts or through court action.

THE amendment would apply to the so-called "indeterminate" escalator clauses, the effect of which cannot be safely predicted. Among these are the type under which the pipeline agrees to pay the producer a higher price, whenever it pays another producer a higher price for gas. The amendment would not apply to "escalator clauses" which (1) provide for specific price increases at specific future dates or (2) provide for the producer to reimburse the pipeline for tax increases levied after a specific date. On these clauses, an automatic pass through would be permitted without requiring pipelines to apply to FPC for a rate increase.

"The primary purpose," Priest told newsmen, "is to give the consumer protection against price increases that would result from triggering off of unknown and indeterminate escalator clauses."

Both producer and consumer spokesmen have objected to the preliminary stand taken by the House committee. General counsel for the Independent Petroleum Association of America told the Senate Commerce Committee during hearings that producers should be entirely freed from FPC controls. He opposed supervision of escalation contracts and supported the producer-exemption bill (S 1853) by Senator Fulbright without change. Other producer witnesses took a similar position. This can be considered a tactical bargaining point. But it may mean that producers will not accept a compromise with stringent escalation controls, this year at least. Producer witnesses opposed both the omnibus bill (S 1880) by Senator Magnuson (Democrat, Washington) involving a multiplicity of changes in gas controls, and S 1283, a bill by Senator Douglas (Democrat, Illinois) for FPC

regulation of producers on a strictly original cost basis. Some FPC opposition to parts of the Magnuson Bill is expected.

A spokesman for the consumer interest also objected to the compromise move in the House. The mayor of Philadelphia, speaking for the chief executives of 49 of the nation's largest cities, told the Senate committee to "leave the law as it is" and let FPC work out the details of regulation.

Ike Defends TVA

PRESIDENT Eisenhower, at his press conference on May 18th, found himself unexpectedly cast in the rôle of General Jackson protecting the Tennessee Valley Authority in the rôle of Barbara Frietchie. It all started when the public power bloc, following the same technique used in its earlier attempt to discredit (far in advance) an anticipated Hoover Commission report adverse to the Rural Electrification Administration, burst forth with angry blasts that the Hoover Commission was about to recommend the scuttling of the TVA.

Senator Kefauver (Democrat, Tennessee) called the Hoover Task Force on Water Resources "stacked" and urged Commission Chairman Hoover to make the report public without any further delay—presumably so the power bloc could shoot at it more effectively. Representative Ross Bass (Democrat, Tennessee) introduced a bill calling for the abolition of the Hoover Commission.

The *Nashville Tennessean,* in a copyrighted story issuing an advance report, said that the Task Force was going to recommend the following:

> The Atomic Energy Commission, TVA's biggest customer, take over all TVA steam and hydroelectric plants which now supply the AEC with power.
>
> TVA be required to invite bids "as soon as possible" for the sale or lease of all its remaining power facilities.
>
> The Army Corps of Engineers be required to transfer all its Cumberland river power facilities to TVA so they could join the general TVA auction.

In addition, it was learned from other sources that the Task Force has recommended future nation-wide flood-control and irrigation projects to be on a 50-50 basis between the federal government and local communities. Water experts contend such a ratio would be prohibitive. They say local communities do not have such funds.

RECLAMATION Commissioner W. A. Dexheimer admitted last month that the report would probably be critical of USBR reclamation projects. Dexheimer said that the 26-man Task Force gave him the impression that it favors spending federal billions for nonreimbursable projects but little or nothing for reimbursable projects. As in the case of earlier Hoover Commission reports critical of federal government operations in the power and competitive business fields (such as the REA report), it is not expected that the administration will make any move to sponsor the recommendations at the present session of Congress or even at the next session. For political reasons, it is believed the administration would prefer to have the Hoover Commission reports stand on the basis of their own publicity and reasoning until after the next general election.

President Eisenhower, in his press conference on May 18th, said the TVA has "served a useful purpose" and his administration "will never wreck the TVA." Eisenhower's remarks were in reply to a question based on the reports that the Hoover Commission on Government Reorganization favors "some changes in the setup of the TVA."

Wire and Wireless Communication

Independent Companies and Rural Telephony

THE need of rural areas for good telephone service is a challenge to the telephone industry, particularly the independent branch of the industry. Citing the need for improved and expanded service to take care of the increasing population constantly moving into the rural areas, Everett C. Weitzell, head of REA's rural telephone loan division, told Kansas and Missouri independent telephone men last month that the independent telephone industry has a unique rôle to play. Weitzell spoke to the fourth annual joint convention of the Kansas Telephone Association and the Missouri Telephone Association.

Weitzell noted that it was the independents which initially forged ahead to take telephone service to the less densely populated areas of the country. In some cases individuals established service for their own benefit; in others, groups banded together to form mutual associations, farmers' lines, or stock companies in order to provide an essential community service.

"With the passing of fifty years . . . many of these small systems are in need of rehabilitation and modernization," Weitzell said. "In many rural communities the telephone service is the most antiquated aspect of social and economic life. Service is poor, subscribers are unhappy, and many pressures are being brought to bear in favor of a change."

In many respects, the task of the telephone industry is one of the most difficult ever undertaken by private enterprise, Weitzell stated. For one thing, a very large proportion of the independent companies are very small and inefficient in terms of modern technology. "Except in unusual instances, it is a simple matter of fact that companies of this very small size are not in a position to handle the large per-station investments that are required for a modern telephone service. Considerable reorganization and consolidation will necessarily have to take place in order to establish economical and efficient operating units."

ANOTHER drawback for the independents is in their management and technical operations. Weitzell noted that there is no reservoir of trained personnel from which independents may draw managerial and technical personnel as they convert to dial and assume the responsibilities of modern telephone service. This means that personnel must be trained along with the process of rehabilitation and modernization.

On top of these difficulties, there is the additional fact that rural telephone service does not generally provide or permit as

high a return to invested capital as is normally expected. This, in itself, creates a serious problem, Weitzell said. "Because the earning margins are low, normal and orthodox investors seem to shy away from the independent telephone field. Over the years this has meant that adequate capital has not been provided for improving and expanding rural telephone service."

The rural telephone program, as a function of REA, was established by Congress to meet some of these difficulties, Weitzell told his audience. Those who are administering the program are interested only in carrying out its purposes in accordance with the principles of a free and independent telephone industry. Without the low-cost, long-term financing that REA loans provide, modern and adequate telephone service cannot be a reality for a large segment of the rural population, the REA executive said.

WHAT are the factors upon which the eligibilty of an independent telephone company for an REA loan depends? Weitzell listed the following requirements:

(1) Loans must be made for the expansion and improvement of rural telephone service, and not solely for refinancing. And not more than 40 per cent of any loan may be used for refinancing existing indebtedness.

(2) The loan must be economically feasible, with reasonable expectation that it will be repaid within the period agreed upon, along with the interest thereon. Size of the company, investment required per station, earning capacity, and similar factors will determine the feasibility of a loan.

(3) The borrower must provide reasonable security in terms of clear titles to its property. It is necessary in all cases to obtain adequate and satisfactory title to all properties which the borrower proposes to incorporate into its system.

(4) The equity requirement on REA loans will ordinarily vary between 10 and 15 per cent of the *pro forma* assets of the borrower. This is in contrast to the 40 to 50 per cent equity requirement normally required by banks and insurance companies.

(5) The borrower must meet minimum REA engineering standards which are designed to assure that a plant will be maintained and operated over the life of a loan at the lowest possible annual cost.

WEITZELL emphasized that if the independent industry is going to develop in a manner consistent with the requirements of modern telephony, complete and adequate financing will be essential. He warned:

> Don't be misled by those who would suggest that you should accept partial financing without knowing where the remainder of your capital is to come from. If you are going to satisfy the demands for service within your service areas, and avoid the embarrassment of not being able to do a complete job, it is essential that you follow a plan which will assure that sufficient capital will be available to meet all your requirements. The purchase of central office equipment is not enough. You must have outside plant capable of bringing in the revenue-producing traffic which is essential to make your operation economical and profitable.

WITH the assistance of representatives of the United States Independent Telephone Association, the REA loan contract has been developed so as to place a minimum of controls over REA borrowers, Weitzell said.

Financial News and Comment

By OWEN ELY

High Lights of Reports to Stockholders

On the occasion of the annual EEI convention, it has been the custom to review in this department the reports to stockholders issued by electric utility companies in recent weeks and to cull out items of broad general interest to the industry as a whole. The following comment is based on the 1954 reports:

Style of Report: Florida Power & Light's striking report is set up along chamber of commerce lines, with a heading at the top "Helping Build Florida, Land of Sunshine." The text includes such paragraph headings as "There's More Than Meets the Eye" and "New Welcome Mat Is Bigger." One of the most colorful reports is that of Southwestern Public Service, with a number of full-page color pictures. Portland Gas & Electric's cover, with its transparency in red of a domestic scene, is an eye catcher. Public Service of Colorado's cover pages present beautiful mountain views. Kansas Power & Light's double cover gives a humorous layout of a suburban area in color, illustrating the part played by the utility in community activities.

Arizona Public Service's report is unique in its introduction of two Mexican comic-strip characters. The two figures, along with Reddy Kilowatt, appear on the cover pages, in the text, and in the artist's pictures. The text is in conversational form, geared to an imaginary tour of the company, with President Sargent answering the questions of Gordo and Pepito Lopez.

Stockholders: Central Maine Power devotes its inside cover page to a map and chart analyzing its list of stockholders and their distribution. Dayton P&L has an interesting breakdown of stock ownership, and describes its employee stock plan. (Employees have bought over $4,000,000 of stock.)

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Charts: It would be difficult to single out the reports which contain the best charts. California-Pacific Utilities has some interesting maps and graphs, particularly the one on page 3 giving an historical record of the disposal of revenues. Carolina Power & Light has an intriguing chart showing the respective

"take" of government agencies (taxes), employees (payrolls), and owners (dividends). Needless to say, the government's share is by far the largest. This company also has a simplified income account and balance sheet which other companies might well imitate.

Central Illinois Public Service devotes one page to unusual charts on system peak loads, one showing the morning and evening peaks over a period of years, the other the relationship of peak load to temperature. Citizens Utilities' report is again notable for its liberal use of graphic charts and maps, illustrating its highly diversified operations.

DEPRECIATION: A few reports (such as Florida Power Corporation's) discuss accelerated amortization, but there is little or no comment on the new forms of special depreciation provided in the 1954 Tax Code—presumably the subject will require further study.

Taxes: Pacific Gas and Electric and Consolidated Edison are the large utilities which give a complete analysis of local, state, and federal tax payments. It might be well worth while for other utilities to give additional attention to this subject.

Rate Increases: Space does not permit a description of the various rate increases granted, proposed, or discussed. Reference is made to the reports of the following utilities: California Electric Power, Central Illinois Electric & Gas, Central Maine Power, Cincinnati Gas & Electric, Citizens Utilities, Cleveland Electric, Southern California Edison, Virginia Electric & Power, Wisconsin Electric Power, Public Service of New Hampshire, Pennsylvania Power & Light, Central Illinois Light, Pacific Gas and Electric, Kansas Power & Light, and Iowa-Illinois Gas & Electric.

Area Development: Baltimore Gas & Electric devotes two pages of its report to "Opportunities for New Industry," with a map showing port terminals, modern highways, airports, etc. The company's industrial development bureau will aid in preparing confidential studies regarding plant sites, etc. The report of Upper Peninsula Power Company describes the industrial revival in upper Michigan and the diversification of industry. (This topic was covered more fully in a recent talk by President Warden before the New York Society of Security Analysts.) Some other utilities that devote a page or two of their reports to area development include West Penn Electric, Rochester Gas & Electric, Gulf Power, Texas Power & Light, Houston Lighting, and Minnesota Power & Light.

New England has gained somewhat of an undeserved reputation for slipping proportionately in its industrial appeal, due to the migration of part of the textile industry to the South in recent years. The reports of New England Gas & Electric, New England Electric, and other utilities in the area devote space to combating the idea and describing the new electronics, machinery, and other plants which are replacing the lost units of the textile industry.

Empire District Electric is one of the few utilities operating in an area of declining natural resources. Its report includes a chart showing that while lead and zinc mining has decreased 57 per cent in the last decade, industry has become diversified and its industrial business has increased 153 per cent.

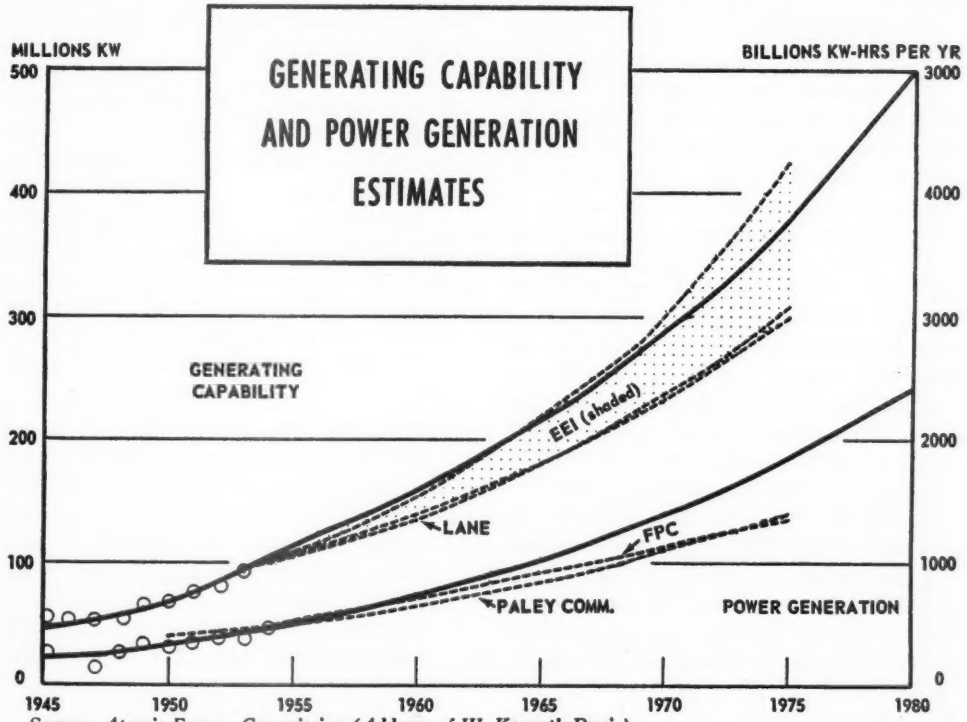
HIGHWAYS *and Parkways:* Some utilities mention the stimulating effects of new highways and parkways—Atlantic City Electric devotes two pages of its report to the Garden state parkway. Boston Edison also has two pages of "Highways

to Future Growth," with pictures of some of the new industries attracted to the suburban service area. Central Hudson Gas & Electric and Rockland Light & Power describe the importance of the New York state thruway, and other new expressways in the area. Ohio Edison's report mentions the Ohio turnpike, and the proposed north-south turnpike.

St. Lawrence Seaway: Cleveland Electric Illuminating and Ohio Edison devote space to describing the benefits which their areas should receive when the seaway is completed in 1959.

HEAT *Pumps:* This is one of the most promising long-term load builders. Central & South West says that there is widespread testing of the pump in its area, which if successful will permit its subsidiaries to participate in the winter air-conditioning load and thus substantially improve the annual load factor. Preliminary results are favorable and indicate that heating costs are reasonable.

American Gas & Electric reported that 1,221 resistance heated homes were added during the year, raising the number on the system to over 2,800. (There were also many thousands of kilowatts of supplemental heating added.) This was the first year in which the company began to see "real results" from the heat pump. Both GE and Westinghouse established dealers for packaged heat pumps in most of the company's territory and others are expected to begin production in the near future. The utility carried out a program of training its own organization to help dealers. Over 100 heat pumps were sold during the year, bringing the system total to 193. Within a few years the company



Source: Atomic Energy Commission (Address of W. Kenneth Davis)

expects to sell many times this amount. It has an experimental heat pump solar collector in operation at the Philip Sporn plant as an auxiliary heat source for the heat pump.

Atlantic City Electric is actively promoting the heat pump, 20 having been sold in 1954, mostly for use in new homes; it it estimated that 150 will be sold in 1955. According to the report, industry figures forecast that in ten years almost a million heat pumps will have been installed nationally, with sales at the rate of a quarter-million a year by that time.

Florida Power Corporation is continuing to push the sale of heat pumps and last year added as many as it had in the previous seven years. About one-third of all heat pumps are in Florida. Room air conditioners and electric space heating are also being promoted.

AIR-CONDITIONING *Load:* Air conditioning is becoming an important factor in the summer load growth. Central & South West last year benefited sharply by the sustained period of excessive heat in Texas, which caused a new record peak demand nearly 16 per cent above that of the previous year. As a result of this and other factors, share earnings jumped to $2 from $1.72 in the previous year. While electric revenues gained less than 7 per cent in the first half of the year, the second half showed a gain of over 14 per cent. Texas Utilities also benefited by the 52-day heat wave. American G&E reported an increase of 75 per cent over 1953 in sales of room air-conditioning units.

Power for the AEC: The AEC is now reported to be taking over 7 per cent of all the nation's electricity. OVEC's two 200,000-kilowatt generating units (serving the gaseous diffusion project at Portsmouth) went into operation in January, a month ahead of schedule—two years after the project left the drafting boards. Nine more will follow, making Clifty Creek the largest power plant ever built by a private company. (Kiger will be only slightly smaller.) Reports of Cincinnati Gas & Electric, Columbus & Southern Ohio Electric, Dayton Power & Light, Southern Indiana Gas & Electric, Toledo Edison, and Ohio Edison describe the construction progress of OVEC, its financial setup, and its relations with sponsoring utilities. The report of Union Electric discusses construction progress at the Joppa plant of EEI, also built to service the AEC.

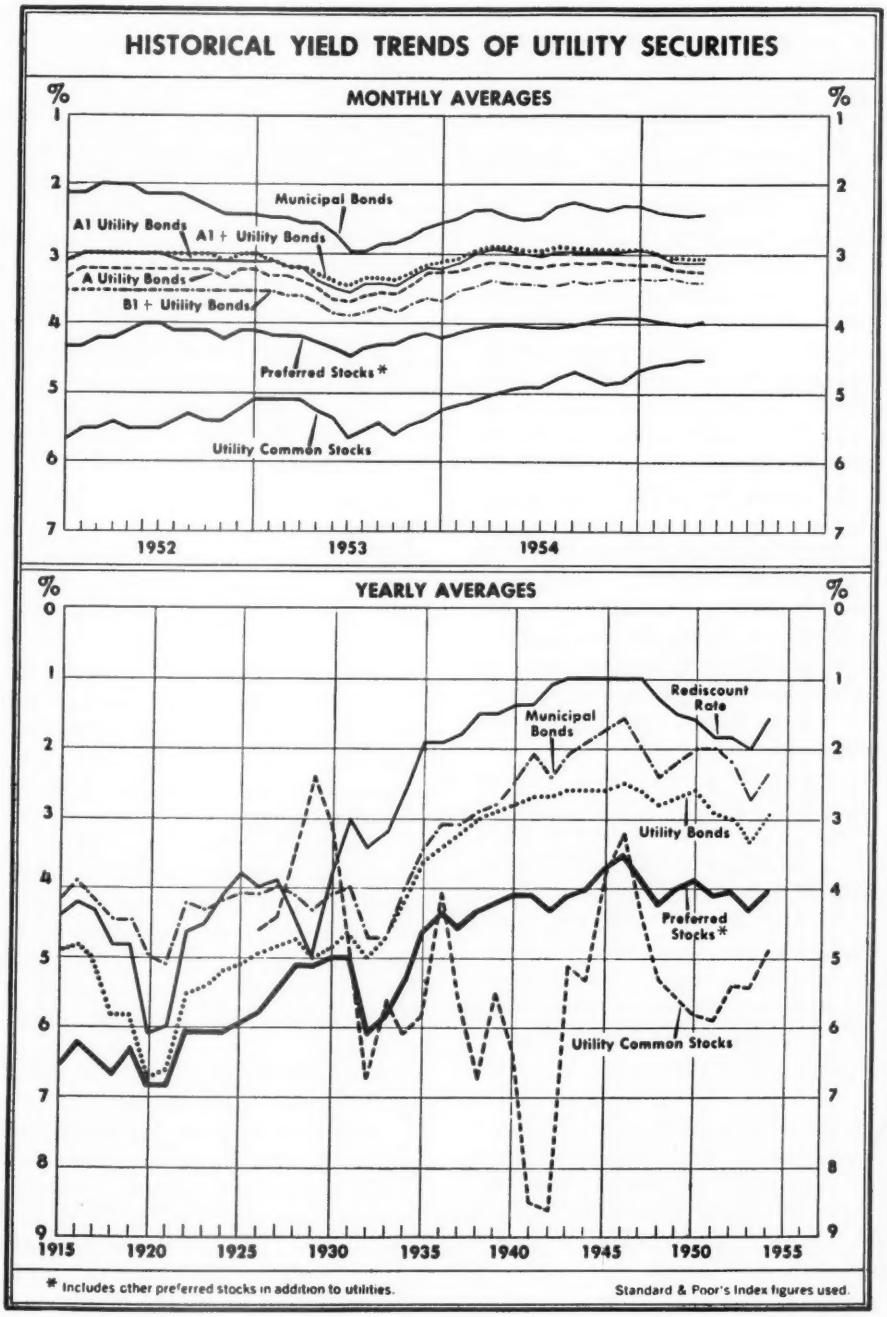
NATURAL *Gas:* Conversion to natural gas is still proceeding in some sections, including parts of the New York metropolitan area. Consolidated Edison's report describes the $27,500,000 program, started last September, to convert its entire remaining area, now served with mixed gas, to natural gas.

Public Service Electric & Gas describes its success in obtaining additional supplies of natural gas, and the beginnings of its program to convert the area from mixed to natural gas.

The report of Northwestern Public Service states that the company has been trying for fifteen years to bring natural gas to eastern South Dakota, with some improved prospect for success at present.

Postwar Expansion Slowing? American Gas & Electric's report states:

> Barring any further national emergencies, it should be possible to carry out for some time our required further expansion at a more normal pace, by providing merely for normal growth. This should bring many important benefits, not the least of which are lower construction and production costs, and make possible operation without the economic disadvantages that beset operations with low reserves.


HISTORICAL YIELD TRENDS OF UTILITY SECURITIES
MONTHLY AVERAGES
%
Municipal Bonds
A1 Utility Bonds
A1 + Utility Bonds
A Utility Bonds
B1 + Utility Bonds
Preferred Stocks *
Utility Common Stocks
1952
1953
1954
YEARLY AVERAGES
Rediscount Rate
Municipal Bonds
Utility Bonds
Preferred Stocks*
Utility Common Stocks
1915
1920
1925
1930
1935
1940
1945
1950
1955
* Includes other preferred stocks in addition to utilities.
Standard & Poor's Index figures used.

However, the reports of utilities in the Texas area do not indicate any apparent decline in the rate of construction in that area; Central & South West, for example, is planning record expenditures in 1955-56.

HYDRO *Development:* Niagara Mohawk, New York State Electric & Gas, and Central Hudson Gas & Electric devote special attention in their reports to the proposed Niagara river development, which remains a bone of contention between Robert Moses (already busy building the St. Lawrence power project) and the New York utilities (headed by Niagara Mohawk) which have devoted much time and money toward the development plans.

Southern California Edison and Pacific Gas and Electric are still actively developing hydro projects in California. Virginia Electric & Power devotes a page to the $34,000,000 Roanoke river program, which it won the right to develop after many years of litigation with the Interior Department.

The Pacific Northwest is still the scene of major hydro development and planning. The reports of Pacific Power & Light, Washington Water Power, and Portland General Electric describe some of the important plans of their affiliate, Pacific Northwest Power. Puget Sound Power & Light describes the plans of the new Puget Sound Utilities Council in which it has teamed up with Tacoma, Seattle, and several public utility districts.

ATOMIC *Power:* Almost every annual report has a word to say about atomic power, but usually the stories are couched in somewhat similar generalities. Arizona Public Service (see page 705) comments humorously as follows:

Jus one teeng more, Senor Reddy. You got a good company an' a good beezness here; but whot gonna happen to eet when peoples can buy a leetle atom power plant for their house?

In the first place, Gordo, that probably will never happen. We've all read and heard statements like that, but the leading scientists say that such a thing is highly improbable. However, atomic energy has a very definite place in the electric utility industry. Contrary to what a lot of people think, the use of atomic energy will not do away with power plants as we know them today. What it will do is replace the firebox with a nuclear reactor—atomic energy will simply provide an alternate fuel for our generating plants.

GENERAL Public Utilities really comes to grips with the subject, enclosing with its annual report (Information Series No. 12) a lengthy report "How Will Atomic Power Affect Us?" Duquesne Light and Detroit Edison devote special attention to the atomic reactor projects with which they are closely affiliated, and Rochester Gas & Electric presents a diagram of a theoretical 100,000-kilowatt breeder reactor.

Adequate Wiring: Surprisingly few annual reports mention one of the industry's leading problems, adequate wiring. Consumers Power points out that we now have two-and-a-half times as many appliances in household use as twenty years ago—with perhaps 15 or 20 electric motors in the home.

Stronger educational efforts seem needed to remedy the situation.

Hurricanes: There are usually a few utilities (other than the hydro companies) which suffer from abnormal weather conditions. Last year the New England companies and Long Island Lighting suffered from hurricanes Carol and Edna. (Hazel turned inland before reaching New Eng-

land.) Naturally the reports of these companies described the storm damage, the emergency work (with help from other areas) to restore service quickly, and the effects on share earnings.

MODERN *Business Machines:* Alabama Power's report says: "Akin to research has been the growing application of modern business machines to various aspects of the company's business such as accounting, customers' billing, and payroll procedures, and the utilization of these machines in solving certain engineering and operating problems."

American G&E has put into operation a "penalty factor computor" which simulates mathematically the entire generation transmission system, instantly computing opportunities for economies in long-distance transmission which is expected to save $100,000 a year. Atlantic City Electric and six other electric utilities have installed a $400,000 network calculator at Franklin Institute, Philadelphia, each of the companies having time allotted for use of the machine in proportion to its financial participation.

Public Power: The reports of Northern States Power and St. Joseph Light & Power discuss public power developments in the Missouri valley, where some of the new hydro projects are now coming into operation. Utah Power & Light discusses various angles of public power under the heading "Energized Socialism."

Georgia Power Company is still negotiating (after five years) with the Department of the Interior for the distribution of Georgia's share of the power produced at the federally financed Clark Hill dam on the Savannah river.

One of the most controversial political topics of the past year, the so-called Dixon-Yates controversy, receives comparatively little attention in the reports of the companies affected. Southern Company devotes a paragraph to the project.

Employee Benefits: Arkansas-Missouri Power Company devotes a page of its annual report to listing the substantial benefits developed for employees.

DATA ON ELECTRIC UTILITY STOCKS

1954 Rev. (Mill.)			*5/17/55 Price About*	*Div. Rate*	*Current Yield*	*Share Earnings — Cur. Period*	*% Increase*	*12 Mos. Ended*	*Price-Earns. Ratio*	*Dividend Pay-out*	*Common Stock Equity*
$230	S	Amer. Gas & Elec.	44	$1.80	4.1%	$2.65**	10%	Mar.	16.6	68%	33%
35	O	Arizona Pub. Serv.	26	1.00	3.8	1.65	27	Mar.	15.8	61	28
9	O	Arkansas Mo. Pr.	25	1.24a	5.0	1.86	24	Mar.	13.4	67	30
27	S	Atlantic City Elec.	42	1.60b	3.8	2.17	18	Mar.	19.4	74	30
107	S	Baltimore Gas & Elec.	35	1.60	4.6	1.98	29	Mar.	17.7	81	37
5	O	Bangor Hydro-Elec.	35	1.80	5.1	2.30	8	Mar.	15.2	78	33
4	O	Black Hills P. & L.	26	1.28	4.9	2.10	7	Jan.	12.4	61	26
86	S	Boston Edison	58	2.80	4.8	3.12	5	Dec.	18.6	90	53
17	A	Calif. Elec. Power	12	.60	5.0	.76	D6	Mar.	15.8	79	34
17	O	Calif. Oregon Power	31	1.60	5.2	1.86	32	Dec.	16.7	86	36
7	O	Calif.-Pacific Util.	28	1.40	5.0	2.18**	4	Mar.	12.8	64	30
54	S	Carolina P. & L.	24	1.10	4.6	1.53	13	Mar.	15.7	72	32
23	S	Cent. Hudson G. & E.	18	.76	4.2	1.02	26	Mar.	17.6	75	33
16	O	Cent. Ill. E. & G.	36	1.60	4.4	2.72	36	Mar.	13.2	59	32
30	S	Cent. Ill. Light	47	2.20	4.7	3.15	12	Mar.	14.9	70	40
46	S	Cent. Ill. P. S.	26	1.40	5.4	2.13	44	Mar.	12.2	66	33
10	O	Cent. Louisiana Elec.	29	1.20	4.1	1.62	17	Mar.	17.9	74	30
30	O	Cent. Maine Power	26	1.20	4.6	2.00	27	Mar.	13.0	60	30
105	S	Cent. & South West	32	1.32	4.1	2.00	16	Dec.	16.0	66	33
10	O	Cent. Vermont P. S.	18	.92	5.1	1.32	50	Mar.	13.6	70	30
95	S	Cincinnati G. & E.	26	1.20	4.6	1.71	13	Dec.	15.2	58	37
6	O	Citizens Utilities	15	.48h	6.2a	1.07	5	Mar.	14.0	45	38

1954 Rev. (Mill.)		(Continued)	5/17/55 Price About	Div. Rate	Current Yield	Share Earnings Cur. Period	Share Earnings % Increase	Share Earnings 12 Mos. Ended	Price-Earns. Ratio	Dividend Pay-out	Common Stock Equity
91	S	Cleveland El. Illum.	68	2.60	3.8	3.86	D4	Dec.	17.6	67	44
3	O	Colo. Cent. Pwr.	29	1.20	4.1	1.63	15	Mar.	17.8	74	39
35	S	Columbus & S. O. E.	31	1.60	5.2	1.97	3	Mar.	15.7	81	33
310	S	Commonwealth Edison	40	1.80c	4.5	2.78	32	Mar.	14.4	65	49
10	A	Community Pub. Service	25	1.00#	4.0	1.76	13	Mar.	14.2	57	49
2	O	Concord Electric	40	2.40	6.0	2.64	6	Dec.	15.2	91	63
60	O	Connecticut L. & P.	20	.98	4.9	1.17**	2	Mar.	17.1	84	38
19	O	Connecticut Power	45	2.25	5.0	2.56	10	Mar.	17.6	88	41
474	S	Consol. Edison	50	2.40	4.8	2.96	2	Mar.	16.9	81	43
170	S	Consumers Power	48	2.20	4.6	3.18	8	Mar.	15.1	69	42
61	S	Dayton P. & L.	44	2.00	4.5	2.88	4	Dec.	15.3	69	36
31	S	Delaware P. & L.	35	1.50	4.3	2.17	14	Mar.	16.1	69	35
196	S	Detroit Edison	36	1.60	4.4	2.18	14	Mar.	16.5	73	45
113	A	Duke Power	54	2.00	3.7	3.21	1	Mar.	16.8	62	53
81	S	Duquesne Light	35	1.80	5.1	2.11	1	Mar.	16.6	85	32
27	O	Eastern Util. Assoc.	34	2.00	5.8	2.28	5	Mar.	14.9	88	33
2	O	Edison Sault Elec.	14	.60	4.3	1.04	27	Dec.	13.5	48	49
10	O	El Paso Elec.	40	1.60	4.0	2.43	19	Mar.	16.5	66	37
10	S	Empire Dist. Elec.	26	1.40	5.4	1.88	D11	Mar.	13.8	74	32
4	O	Fitchburg G. & E.	53	3.00	5.7	3.26	16	Dec.	16.3	92	53
38	S	Florida Pwr. Corp.	44	1.60	3.6	2.25	11	Mar.	19.6	71	30
79	S	Florida P. & L.	66	2.00	3.0	3.79	28	Mar.	17.4	53	35
163	S	General Pub. Util.	36	1.70	4.7	2.42	13	Dec.	14.9	70	39
6	O	Green Mt. Power	33	1.80	5.5	2.32	35	Feb.	14.2	78	39
47	S	Gulf States Util.	33	1.40	4.2	1.93	3	Mar.	17.1	73	30
20	A	Hartford E. L.	59	2.75	4.7	3.70	10	Mar.	15.9	74	47
5	O	Haverhill Elec.	44	2.15†	4.9	1.95	D35	Dec.	22.6	110	100
58	S	Houston L. & P.	43	1.20	2.8	2.19	26	Mar.	19.6	55	40
7	O	Housatonic P. S.	26	1.40	5.4	1.58	20	Dec.	16.5	89	46
23	S	Idaho Power	29	1.10	3.8	1.83	9	Mar.	15.8	60	35
70	S	Illinois Power	53	2.20	4.2	3.13	22	Mar.	16.9	70	35
37	S	Indianapolis P. & L.	25	1.10	4.4	1.70	6	Mar.	14.7	65	35
18	S	Interstate Power	14	.70	5.0	1.00	8	Mar.	14.0	70	30
27	O	Iowa Elec. L. & P.	27	1.25	4.6	1.92	19	Mar.	14.1	65	30
31	S	Iowa-Ill. G. & E.	35	1.80	5.1	2.29	5	Mar.	15.3	79	39
31	S	Iowa Power & Lt.	28	1.40	5.0	1.89	D1	Mar.	14.8	74	30
27	O	Iowa Pub. Service	16	.80	5.0	1.09	9	Mar.	14.7	73	29
12	O	Iowa Southern Util.	23	1.20	5.2	1.60	4	Mar.	14.4	75	38
51	S	Kansas City P. & L.	43	1.80	4.2	2.31	7	Mar.	18.6	78	34
25	O	Kansas Gas & Elec.	56	2.40	4.3	3.97	14	Apr.	14.1	60	31
36	S	Kansas Pr. & Lt.	23	1.20	5.2	1.56	13	Mar.	14.7	77	26
35	O	Kentucky Util.	27	1.20	4.4	2.30	25	Mar.	11.7	52	33
6	O	Lake Superior D. P.	22	1.10	5.0	1.44	1	Mar.	15.3	76	37
5	O	Lawrence Elec.	30	1.60	5.3	1.40	D25	Dec.	21.4	77	63
77	S	Long Island Ltg.	22	1.00	4.5	1.26**	D2	Mar.	17.4	79	32
41	S	Louisville G. & E.	47	1.80	3.8	3.35	2	Dec.	14.0	54	34
7	O	Lowell Elec. Lt.	60	3.30†	5.5	3.04	D19	Dec.	19.7	109	65
8	O	Lynn G. & E.	29	1.60	5.5	2.01	D7	Dec.	14.4	80	75
7	O	Madison G. & E.	43	1.60	3.7	3.20	2	Dec.	13.4	50	53
3	A	Maine Public Service	30	1.60	5.3	2.21	30	Mar.	13.6	72	35
4	O	Michigan G. & E.	38	1.35h	6.6h	3.13	4	Dec.	12.1	43	31
144	S	Middle South Util.	31	1.50	4.8	2.17	10	Mar.	14.3	69	35
24	S	Minnesota P. & L.	25	1.20	4.8	1.72	D13	Feb.	14.5	70	35
2	O	Miss. Valley P. S.	27	1.40g	5.2	2.42	10	Apr.	11.2	58	30
10	A	Missouri P. S.	14	.60	4.3	.90	14	Dec.	15.6	67	28
5	O	Missouri Util.	27	1.36	5.0	1.89	19	Mar.	14.3	72	35
31	S	Montana Power	37	1.60	4.3	2.62	D2	Mar.	14.1	61	36
122	S	New England Elec.	18	.90	5.0	1.23**	—	Mar.	14.6	73	34
38	O	New England G. & E.	18	1.00	5.6	1.35**	D1	Mar.	13.3	74	37
43	O	New Orleans P. S.	45	2.25	5.0	2.65	2	Feb.	17.0	85	39
2	O	Newport Electric	41	2.00	4.9	2.55	D10	Mar.	16.1	78	34
73	S	N. Y. State Elec. & Gas	41	2.00	4.9	2.64	D1	Mar.	15.5	76	35
210	S	Niagara Mohawk Pwr.	34	1.60	4.7	2.14	4	Mar.	15.9	75	34
68	O	Northern Ind. P. S.	34	1.60	4.7	2.55	17	Mar.	13.3	63	34
118	S	Northern States Pr.	17	.80	4.7	1.11	9	Mar.	15.3	72	29
9	O	Northwestern P. S.	17	.90	5.3	1.31	7	Mar.	13.0	69	27

1954 Rev. (Mill.)		(Continued)	5/17/55 Price About	Div. Rate	Current Yield	Share Earnings — Cur. Period	% Increase	12 Mos. Ended	Price-Earns. Ratio	Dividend Pay-out	Common Stock Equity
110	S	Ohio Edison	47	2.20	4.7	3.15	9	Mar.	14.9	70	41
40	S	Oklahoma G. & E.	35	1.60	4.6	2.26	27	Mar.	15.5	71	30
14	O	Otter Tail Power	30	1.60	5.3	1.98	D1	Mar.	15.2	81	31
386	S	Pacific G. & E.	48	2.20	4.6	2.88	2	Dec.	16.7	76	39
40	O	Pacific P. & L.	26	1.30	5.0	1.57	D3	Mar.	16.6	83	28
109	S	Penn Power & Lt.	46	2.40	5.2	2.93	9	Mar.	15.7	82	29
10	A	Penn. Water & Pwr.	49	2.00	4.1	2.73	28	Dec.	17.9	73	29
196	S	Philadelphia Elec.	39	1.80	4.6	2.29	4	Mar.	17.0	79	36
29	O	Portland Gen. Elec.	22	1.00	4.5	1.48	16	Jan.	14.9	68	42
52	S	Potomac Elec. Pwr.	21	1.00	4.8	1.18	2	Mar.	17.8	85	36
63	S	Pub. Serv. of Colo.	43	1.80	4.2	2.52	8	Mar.	17.1	71	34
250	S	Pub. Serv. El. & Gas	32	1.60	5.0	2.12**	14	Mar.	15.0	75	31
62	S	Public Serv. of Ind.	42	2.00	4.8	2.44	4	Mar.	17.2	82	34
23	O	Public Serv. of N. H.	17	.90	5.3	1.37	57	Mar.	12.4	66	33
10	O	Public Serv. of N. M.	16	.68	4.3	.96	55	Mar.	16.7	71	31
21	S	Puget Sound P. & L.	36	1.72	4.8	2.11	12	Mar.	17.1	82	58
49	S	Rochester G. & E.	47	2.24	4.8	3.25	D2	Mar.	14.5	69	34
14	O	Rockland L. & P.	19	.60	3.2	.83	36	Dec.	22.9	72	29
7	S	St. Joseph L. & P.	24	1.32	5.5	1.77	2	Mar.	13.6	75	43
39	S	San Diego G. & E.	17	.80	4.7	1.08	11	Mar.	15.7	74	44
8	O	Sierra Pacific Pr.	42	2.00	4.8	2.67	32	Mar.	15.7	75	28
154	S	So. Calif. Edison	48	2.40	5.0	3.05	29	Mar.	15.7	79	37
34	S	So. Carolina E. & G.	18	.90	5.0	1.38**	13	Mar.	13.0	65	28
6	O	Southern Colo. Pr.	16	.70	4.4	1.21	D1	Feb.	13.2	58	41
194	S	Southern Company	20	.90	4.5	1.30	5	Mar.	15.4	69	29
14	S	So. Indiana G. & E.	32	1.50	4.7	2.42	22	Mar.	13.2	62	34
4	O	So. Nevada Power	19	.80	4.2	1.48	45	Dec.	12.8	54	64
1	O	Southern Utah Pr.	14	1.00	7.1	.92	D3	Mar.	15.2	109	39
3	O	Southwestern E. S.	21	1.00	4.8	1.61	6	Feb.	13.0	62	31
33	S	Southwestern P. S.	28	1.32	4.7	1.56	10	Mar.	17.9	85	30
20	A	Tampa Elec.	30	1.00	3.3	1.45	22	Mar.	20.7	69	36
117	S	Texas Utilities	73	2.32	3.2	3.92	33	Mar.	18.6	59	37
35	S	Toledo Edison	15	.70	4.7	.97	14	Mar.	15.5	72	29
11	O	Tucson G. E. L. & P.	27	1.04	3.9	1.76	25	Mar.	15.3	59	40
114	S	Union Elec. of Mo.	30	1.40	4.7	1.65	21	Dec.	18.2	85	36
28	O	United Illuminating	53	2.55†	4.8	3.13	8	Dec.	16.9	81	51
4	O	Upper Peninsula Pr.	28	1.40	5.0	2.38	60	Dec.	11.8	59	31
32	S	Utah Power & Lt.	45	2.00	4.4	3.03	27	Mar.	14.9	66	41
96	S	Virginia E. & P.	38	1.60	4.2	2.33	36	Mar.	16.3	69	32
23	S	Washington Water Pr.	38	1.70	4.5	1.94	7	Mar.	19.6	88	33
116	S	West Penn Elec.	25	1.20	4.8	1.91	9	Mar.	13.1	63	27
64	O	West Penn Power	48	2.40	5.0	3.05	13	Mar.	15.7	79	33
10	O	Western Lt. & Tel.	31	1.60	5.2	2.70	12	Mar.	11.5	59	27
22	O	Western Mass. Cos.	43	2.20	5.1	2.96	9	Mar.	14.5	74	51
88	S	Wisconsin Elec. Pr. (Cons.)	33	1.50	4.5	2.37	14	Mar.	13.9	63	40
35	O	Wisconsin P. & L.	25	1.28	5.1	1.76	—	Mar.	14.2	73	34
31	S	Wisconsin Pub. Ser.	23	1.10	4.8	1.57	13	Mar.	14.6	70	34
		Averages			4.9%				15.9	72%	
		Foreign Companies									
$186	S	American & Foreign Pr.	14	$ .75(e)	5.4%	$1.90	D25%	Dec.	7.4	39%	48%
116	A	Brazilian Trac. L. & P.	7½	—	—	1.40	D53	Dec.'53	5.4	—	67
56	A	British Columbia Pr.	30	1.00	3.3	1.62	16	Dec.	18.5	62	28
16	A	Gatineau Power	31	1.20	3.9	1.99	12	Dec.	15.6	60	30
10	A	Quebec Power	29	1.20	4.1	1.56	20	Dec.	18.6	77	44
45	A	Shawinigan Wtr. & Pr.	59	1.45	2.5	2.84	25	Dec.	20.8	51	35

B—Boston Exchange. A—American Stock Exchange. O—Over-counter or out-of-town exchange. S—New York Stock Exchange. D—Decrease. *If additional common shares have been recently offered, earnings are adjusted to give effect to the offering. Percentage change is in the net income available for common stock. **Based on average number of shares. b—Also 5 per cent stock dividend. c—Also 3/10 share of Northern Illinois Gas for each share of Commonwealth Edison. #—Also occasional stock dividends. †Estimated. a—Also 8 per cent stock dividend. e—Includes 15 cents extra. g—Also 10 per cent stock dividend. h—Also regular annual 3 per cent stock dividend, which is included in the yield.

What Others Think

State Commissions to Consider Atomic Energy Problems

"NEW developments are coming thick and fast in the nuclear energy field," W. F. Whitney of Wisconsin says as president of National Association of Railroad and Utilities Commissioners (NARUC), in discussing the approaching convention of the association at Asheville, North Carolina.

"Public thinking trends indicate there has been too much 'hush-hush' about nuclear energy, and that greater efforts should be made to educate the public on the facts, development, and benefits relative to profitable industrial uses," the NARUC president explained.

The particular problems of authorizing and developing the use of nuclear energy in the electric utility industry, President Whitney announced, will be given preferential treatment and national attention at the sixty-seventh annual convention of the NARUC, October 24th to 27th, at Asheville.

The NARUC has arranged on October 25th an all-forenoon 6-member panel discussion of nuclear energy. The panel members are well qualified in this particular field and have spent much time conducting special research studies, on a national basis, to provide factual background data.

The panel will consist of:

Moderator

Honorable John H. Hessey, chairman, Maryland Public Service Commission

Panel Members

A commissioner of U. S. Atomic Energy Commission

Honorable John H. McCarthy, chairman, Michigan Public Service Commission

Honorable George P. Steinmetz, commissioner, Wisconsin Public Service Commission

Honorable Ray E. Untereiner, commissioner, California Public Utilities Commission

Honorable Edward R. Thornton, commissioner, New Hampshire Public Utilities Commission

IN considering the unfolding problems of authorizing and regulating the use of nuclear energy, the panel will consider:

1. Progress which has been made in the generation of electricity by use of nuclear energy.

2. Problems which are now and will be presented to regulatory commissions because of this development.

3. The health, safety, and legal aspects which may require governmental supervision.

Audience participation in a question-

answer period will be held during the panel session.

Public service commissioners representing every state, the District of Columbia, and the territories of Hawaii and Puerto Rico, are members of NARUC. The primary purposes of NARUC are to promote research and study of regulation, to develop uniformity of regulatory methods, and to co-ordinate regulation between state and federal commissions.

NARUC conventions draw an average of 500 to 600 registered members and guests.

Persons especially interested may attend under guest registration ($25), all convention sessions and other activities. President Whitney emphasized that notice of guests' intentions to attend the convention, and requests for hotel reservations, should be directed to Commissioner Edward H. McMahan, North Carolina Utilities Commission, Raleigh, North Carolina.

Grove Park Inn, which has been completely reserved for NARUC commissioners and staff members, will be headquarters for all convention sessions. Guest reservations will be made at two other downtown Asheville hotels.

Utility Rate Making in West Virginia

THE regulation of utility rates is of growing concern to everyone since, directly or indirectly, the entire population is affected by the cost of water, gas, electricity, and public communication and transportation. Nearly all customers have greatly increased their use of utility services in the past decade. Moreover, the problem has grown in importance because there has been a larger number of rate proceedings instituted before the various public service commissions since the close of World War II than in any other comparable period in the history of regulation. Noting this fact, Charles C. Wise and Ben K. Baer, writing in the *West Virginia Law Review*, March, 1955, issue, make "Some Comments on Rate Making in West Virginia." In presenting a résumé of the state's rate case problems, they say:

> . . . The first stage in preparing and presenting a rate case is the development of a *cost of service* for a so-called test period which is generally the preceding twelve months. This cost of service customarily is made up of four major factors: (1) operating expenses, (2) depreciation and depletion allowances for property consumed in providing service, (3) taxes, and (4) return to the investor for the use of his money computed by the rate base—rate of return formula. The commission staff often makes independent study and offers evidence.

The original cost for rate-making purposes is established by the books and records of the company, according to the classification of accounts required by the West Virginia commission. Where original cost figures are not available, an estimated original cost study is made and then booked. The customary test of whether property may be properly included in the rate base depends on whether it can be said to be "used or useful" in rendering public service, the article states. Property held for future use is often challenged by protestants.

IN addition to the original cost of plant, the commission allows as part of the rate base, materials and supplies required in day-to-day operations and a sum for working capital computed on the basis of forty-five days for gas and electric utili-

ties which bill subsequent to the rendering of service, and, on a basis of fifteen days for utilities which bill in advance, such as telephone companies. The commission at the present time, states the article, refuses to include in the rate base, over protest of many utilities, acquisition adjustments and construction work in progress.

The article continues:

> Acquisition adjustments represent the difference between the actual cost of property to the utility and its historical "original cost." Many public utility systems in the state today are comprised of a number of small operating companies acquired over many years at an actual cost greatly exceeding the original cost of perhaps a half-century ago. The failure of the commission to allow this differential for rate-making purposes excludes a substantial portion of the actual cost to the utility of acquiring and putting together the systems which permit cheaper and more efficient service. The treatment given to acquisition adjustments stems in part from the Uniform System of Accounts which requires their segregation for accounting purposes. . . . The utility is permitted to charge interest on such work but usually at a rate substantially less than a proper return, and it is often impracticable for the company to charge interest on all construction. The refusal of the commission to include the uncompleted construction work in the rate base appears to stem from the theory that such property is not "used and useful." This test originated in cases where the utility challenged rates as confiscatory in the formative years of regulation when the reproduction cost was the favored method for determining the rate base and the "used and useful" standard was appropriate to this particular method of valuation. Under the original cost approach, however, the concept of "used and useful" in its traditional sense has little, if any, relevancy. . . .

In recent cases, the article notes, the principal area of dispute has shifted from the valuation of the rate base to the area of operating expenses. Here too computation of expenses is influenced by the required accounting classifications. The test period is generally the most recent twelve months' experience for which figures are available. Problems come from the rigid use of the test period, the article states.

Whereas the rates are made for the future, they must, under the West Virginia commission's rule, be based on past experience. Costs must be experienced to be included in the cost of service, thereby creating a regulatory lag.

The operating expenses of a utility are not stable but subject to continuing fluctuation, the article points out, whereas rate proceedings before the commission approach the purported goal of reasonableness only for the period covered by the cost of service. Rates may be just and reasonable at a given time, yet the dollar earnings that they, in fact, produce may turn out to be actually fictitious, since, with constantly rising costs for labor and materials, coupled with continuous necessary expansion of plant facilities, there is chronic attrition in earnings. A utility never realizes all of its given rate of return, and as a result—in order to protect its economic position—it must file repeatedly for rate relief. The writers suggest that the use of an inflexible test period is outmoded.

In appraisal of the commission's depreciation policies, the authors write:

> The commission's present views on depreciation are largely influenced by

original cost accounting and stem from the Uniform System of Accounts. Whereas originally fair value was the basis for computation rather than book cost, the commission now requires that original cost be amortized through an annual allowance for depreciation and depletion. The so-called "straight-line" method has become the accepted method of computing both the annual charge and the reserve. . . .

Although the commission has recognized that the purpose and function of the depreciation reserve and annual charge are to protect the investment in utility plant and proper maintenance thereof for public service, the purported accomplishment is illusory under present commission practice. The use of the original cost for amortization purposes fails to protect plant investment during periods of sustained inflation. The "straight-line" method computed according to original cost is fair to both investor and consumer in periods of stable currency, but is grossly unfair in times of rising costs for replacements must be bought with inflated dollars and effective purchasing power is diminished. . . .

THE article notes a shift, in recent years, occurring in the meaning of "rate of return." The West Virginia commission, along with others, now considers return as an expense of doing business and thus an essential part of the cost of service. This result has been caused in large measure by the tremendous expansion of utility services in the last two decades. The increased demands for service have necessitated additional capital as a recurring item and the cost of obtaining new money has, in effect, constituted an operating expense.

"As long as the commission follows the principle of limiting the rate of return to the historical cost of money, a utility has great difficulty in improving its debt-equity ratio." Manifestly, the article notes, the attraction of new capital for expansion or other purposes may be seriously impaired. Stocks of utilities often sell below current market trends under these circumstances, and, sometimes, even in the case of a well-managed company, at less than book value. The commission, in recognition of these problems, has recently departed somewhat from what the article calls "rather fixed views" as to rate of return, and has allowed net earnings slightly in excess of 6 per cent. The article concludes:

> It is submitted that as long as the current [original cost] rate-making philosophy of the West Virginia commission is purely a mechanical process, geared solely to a strict bookkeeping basis, an ominous threat exists to realistic regulation which is necessary to sustain the growth of the utility business with fair and equal treatment to both the investor and consumer. . . .

The regulatory climate has much to do with an investor's willingness to provide equity capital for the tremendous expansion common to all utilities during the past ten years, the authors state. It has become increasingly more difficult to finance such growth and if the inflationary trend continues, "strict adherence to the original cost concept could cripple, if not ultimately destroy, private enterprise in the utility field."

—E.W.P.

The March of Events

NAEC Meeting

At the tenth annual meeting of the National Association of Electric Companies, held in Washington, D. C., last month, Robert A. Zachary, vice president of Public Service Electric & Gas Company, Newark, New Jersey, was re-elected chairman of the NAEC board to serve another year. P. L. Smith will continue as NAEC president.

Two vice presidents were elected: Howard J. Cadwell, president of Western Massachusetts Electric Company, Greenfield, Massachusetts, and Thomas W. Delzell, chairman of the board of Portland General Electric Company, Portland, Oregon. Nine members were elected to the board of directors for the 3-year term expiring in 1958. These were: James H. Campbell, vice president, Consumers Power Company, Jackson, Michigan; J. E. Corette, president, The Montana Power Company, Butte, Montana; Albert A. Cree, president, Central Vermont Public Service Corporation, Rutland, Vermont; Lee C. Howley, vice president and general counsel, Cleveland Electric Illuminating Company, Cleveland, Ohio; M. S. Luthringer, president, Central Illinois Public Service Company, Springfield, Illinois; P. L. Smith, president, NAEC, Washington, D. C.; J. B. Thomas, president, Texas Electric Service Company, Fort Worth, Texas; R. Baxter Wilson, president, Mississippi Power & Light Company, Jackson, Mississippi; and Robert A. Zachary, vice president, Public Service Electric & Gas Company, Newark, New Jersey. There are eighteen members previously elected for terms running to 1956 and 1957.

California

Power Rate Boost Hinted

A HINT that power and light rates may go up in Los Angeles was contained in a statement issued recently by the Los Angeles Department of Water and Power. The statement, in substance, said the government was threatening further cuts in the city's share of Hoover dam power and that to make up the loss in the city by steam-generated power entailed additional expenses. A 12 per cent cut in Hoover dam power already is in effect.

The board of water and power commissioners issued an order to its engineering staff to make an immediate review of the power system budget for next year.

Power rate experts were also asked to report.

Ben P. Griffith, president of the Water and Power Commission, declared that in the light of the possibility that it might be necessary for the government to reduce firm power output at Hoover dam by 30 per cent, "we are going to have to take a new look at our schedule of financial operations."

Kentucky

Gas Rate Increases Granted

UNITED FUEL GAS and Central Kentucky Natural Gas companies last month were granted annual retail gas rate increases totaling $843,386.

The state public service commission allowed United Fuel to increase its rates $152,099. The company sought a $725,099 increase. The commission granted Central Kentucky Natural Gas authority to raise rates $691,287 a year. The company asked for a $944,308 increase.

Both companies put their proposed increases into effect last January, subject to refund pending a decision by the commission.

An increase of $803,000 a year has also been awarded the Louisville Gas & Electric Company by the state commission, effective June 17th.

Greater Use of Electricity on Farms Noted

DR. E. J. NESIUS, associate director of agricultural extension at the University of Kentucky, recently noted how more electricity is being used on Kentucky farms.

He said figures of the Rural Electrification Administration show the average monthly power consumption per farm on REA-financed lines in Kentucky increased from 90 kilowatt-hours in December, 1947, to 205 kilowatt-hours in December, 1954.

Although this big jump in power consumption is evidence that farmers are making electric power do more work for them, there is still a big field for improving farm efficiency through the wise use of electricity, Dr. Nesius said.

Michigan

Pay Boost Granted

CONSUMERS POWER COMPANY recently announced it had reached a new agreement with the Utility Workers Union of America providing for wage increases ranging from 7 to 9 cents per hour. It also provides for changes in sick leave benefits and other working conditions, and for various modifications of the company's pension plan.

Nebraska

State Needs Power Plan Co-operation

GOVERNOR Victor Anderson told presidents of Nebraska's major public power agencies last month that they must co-operate among themselves to solve what he called "one of the greatest problems confronting our state today." They must place the state's power system in a posi-

tion to produce additional generating facilities at the lowest possible cost, the governor said.

Anderson called the conference of power leaders in an attempt to find a solution to the lengthy controversy among power districts. But he said he did not intend to discuss with them possible methods of reorganizing the power system.

Power officials are in general agreement that the power system must be revamped to avoid a serious shortage of electricity.

Senator Amos Morrison of Mitchell said he might make an effort to have the state legislature reorganize the Nebraska public power system. His decision would depend on an attorney general's opinion as to whether the legislature has authority to determine the way in which public power districts organize, Morrison explained. He said that if the governor cannot see that the power districts are reorganized properly, "it is the duty of the legislature to see that it is done."

Morrison called the power controversy "a fight between the hydros and Consumers over who is going to be supreme." The hydros, Platte and Loup districts, have feuded with the Consumers Public Power District for about two years over which would build new generating facilities.

Oregon

Tax Levied on PUD OK'd

A PEOPLE'S utility district may properly be taxed in Oregon, Circuit Judge Malcolm W. Wilkinson held recently in a case in which the Northern Wasco County Public Utility District had sought to avoid payment.

The state law, which sets up the tax structure, is a valid one, he held in a memorandum opinion, and does not run counter to the Constitution.

However, the judge held, a 1939 law under which 1950 taxes were levied, was faulty. For that reason the PUD must pay only the taxes starting in 1951 when a new tax law was effective, he said.

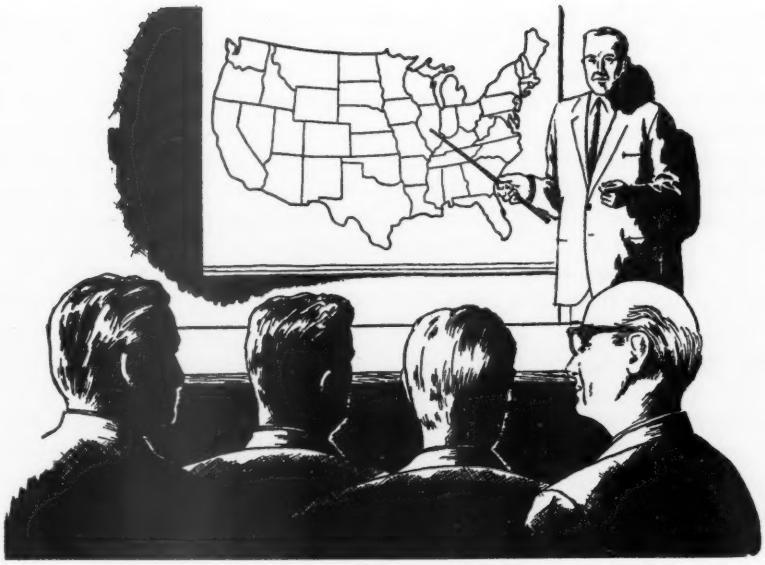
South Carolina

REA Defers Co-operative's Payments

THE Rural Electrification Administration recently granted the Central Electric Co-operative of Columbia, a 3-year deferment of principal payments due REA on loans totaling $13,618,000, the U. S. Department of Agriculture has announced.

The deferment permits the co-operative to purchase wholesale power from the South Carolina Public Service (Santee-Cooper) Authority at 6.4 mills. This is an increase from the present 6-mill rate. However, present retail rates to South Carolina farmers will be maintained.

The loan to the Central Co-operative was made by REA in 1950. It is a federation of 16 electric distribution co-operatives providing electric service to more than 80,000 South Carolina rural families. Its chief source of revenue for loan repayment consists of payments by the state authority as rental of the co-operative's transmission facilities. Before the loan deferment was requested, the authority had given notice of a rate increase to 7.3 mills, retroactive to January 1, 1955.



Progress of Regulation

Regulatory Trends

IMPORTANT utility rate decisions have been plentiful enough in the postwar inflationary period of the past decade. But it is not often that a single decision contains definitive rulings on so many important points as the recent opinion by Judge Spratley for the Virginia supreme court of appeals involving the Virginia Electric & Power Company (April 25th, Record No. 4336). No less than five controversial issues—each noteworthy enough in its own right—were passed upon by the highest court of the Old Dominion state: (1) the year-end rate base, (2) working capital offset, (3) rate comparison with other utilities, (4) acquisition adjustments between purchase price and original cost, and (5) statewide rate-making units. The court's decision upheld the Virginia Corporation Commission's allowance of a $4,800,000 estimated annual electric rate increase for the company which serves throughout the state. The appeal had been taken by the board of supervisors of Arlington county, opposing the proposed rate boost.

The End-of-period Rate Base

Large-scale construction programs undertaken during a period of high and rising prices produce an "attrition," or wearing away, of the allowed return. Aside from considering this fact in fixing return allowances, commissions have also considered it in establishing a rate base. The Virginia supreme

court of appeals has now upheld the state commission's action in using year-end figures instead of average figures as a rate base for the Virginia Electric & Power Company in order to offset "the lag in the return of earnings during the period between the time the money is invested and the time earnings are received."

The court said that in fixing rates for the future the end-of-year rate base provides for revenue which is directly related to plant investment made and being made in a period of abnormal expansion and rising costs and that its employment "is generally followed by rate regulatory commissions in other states." The court referred to decisions in Florida (99 PUR NS 129), Maryland (5 PUR3d 161), Pennsylvania (99 PUR NS 161), and Massachusetts (96 PUR NS 77).

The recent decisions by the District of Columbia and the New Mexico commissions reviewed in PUBLIC UTILITIES FORTNIGHTLY, May 26, 1955, at pages 640 and 644, might also be cited. The year-end investment was adopted by the District commission "to provide a rough counterbalance" for "attrition" when large new investments must be made at prices "sharply higher than the average cost of existing plant." (Printed in full in 8 PUR3d 76.) The New Mexico commission considered estimates to the year end because of the "attrition factor."

Offset to Working Capital

The Virginia court upheld the commission in refusing to offset its allowance of forty days' operating expenses for cash working capital by the amount accrued and deferred for federal income taxes and customer deposits. Such funds, said the court, were not all available to the company for working capital purposes.

Commissions, during recent years, have frequently reduced, or denied entirely, working capital allowances because of the availability of tax accruals. This contrary view of the Virginia court, however, recalls the ruling in a case involving rates of the Public Service Company of New Hampshire (3 PUR3d 361), where the New Hampshire commission, with one commissioner dissenting vigorously on this point, refused to offset tax accruals against working capital because it was "impossible to determine" what taxes would be in 1954 or how these taxes were to be paid.

Rate Comparisons

Objection had been made that the Virginia commission erred in authorizing higher rates than the electric utility company receives in other states in which it operates and that the authorized rates are higher than those charged by Potomac Electric Power Company for electric energy in the same area as that served by the company.

The court rejected this argument, stating that it was not concerned with rates of return allowed in other states, the question being whether local consumers of electricity are charged a fair rate. No evidence was presented show-

ing the cost conditions under which Potomac operates. Therefore, no proper comparison might be made.

Acquisition Adjustments

The net investment rate base which the commission used included an amount representing plant acquisition adjustments, less reserve for amortization of such adjustments. This amount represented sums paid by the company for plant in excess of original cost first devoted to public use. It was being amortized by charges against income over a period of years. This was considered proper by the court.

Statewide Basis

The Virginia commission's adoption of the statewide basis for fixing rates was upheld. The court believed that statewide rate-making units are just as desirable for electric companies as they are for telephone companies. A telephone company at least has a unit for division, an exchange. No such unit exists for the electric business. There are many gradations of telephone service conditions, but the service of electricity is the same at all places and its value cannot be distinguished.

The cost of rendering service in one area differs from the cost in another, as it varies from house to house in the same area. But, the court said, if the unit were broken, there would be no end of rate making. No logical line could well be drawn mile by mile through a service area.

Review of Current Cases

Commission Not Required to Establish Substitute Rate after Canceling Proposed Electric Rate Schedule

An electric company sought to have a wholesale electric rate schedule made applicable to a contract customer. After the Illinois commission had canceled the proposed schedule and a lower court had set aside the commission order, the contract customer appealed to the state supreme court.

The company contended that the commission had approved contracts with other customers which set forth similar rates. Rates charged other customers are evidence of reasonableness only when conditions of service are similar, answered the court. The commission had made no findings as to similarity.

Moreover, even if conditions of service were comparable, the company's argument would not be persuasive. The rates cited were established by individually negotiated contracts, and the commission's approval of them could not be regarded as the equivalent of an order entered in a contested proceeding. Such approval implied no more than that certain rates were appropriate as between two consenting parties. It did not follow that the rates would be reasonable for an entire class of customers.

Duty to Establish Substitute Rate

The company's main objection was

that, regardless of the evidence offered, the commission must in all hearings establish some rate, either the one proposed, or another. The fact that the commission has power to investigate a utility's accounts, appraise its property, and assess expenses against a utility does not, held the court, mean that such power carries with it the duty to exercise it whenever a utility applies for an increase.

The commission is not required to take the initiative in a rate proceeding. The burden of proving reasonableness is upon the proponent of the rate, whether the proposal is for a change in the existing rate or for establishment of a new rate.

Evidence to Support Rate

On the question of evidence submitted, the company maintained that in an integrated system serving many customers, the specific total cost of service to either a single customer or a class of customers could not be computed, since the figure must include a share of the joint cost, and since a precise allocation of the latter was impossible. Therefore, the commission, in asking for specific cost figures, had based its denial of the increase on the failure to produce evidence which was in fact unobtainable.

The argument was not persuasive, said the court. The rate which the company had proposed to put into effect was presumably not selected at random but upon the basis of known data considered relevant by it. So far as joint costs were concerned, the court admitted that there was more than one way in which they might be apportioned, and that the actual apportionment depended upon what factors were deemed significant. It did not follow, however, that no allocation whatever could be made.

The commission had not rejected a proposed formula for apportionment on the ground that it was imprecise or improper, but had simply called upon the company to furnish some justification for its proposed rate increase. In any event, the supposed impossibility of calculating specific total cost would not warrant reversal of the commission's action. The company had had the opportunity to put into evidence relevant factors other than cost to justify a rate increase. Apart from the evidence of allegedly comparative rates, however, the company had chosen to support the rate change on the basis of costs alone.

After canceling the proposed rate schedule, concluded the court, the commission was not required to establish an alternative rate if there was no evidence in the record upon which the reasonableness of such a rate could be based. *Central Illinois Pub. Service Co. v. Illinois Commerce Commission, 125 NE2d 269.*

Standard Electric Rate for Grist Mill Operators Not Discriminatory

SEVERAL grist mill operators, formerly billed for electric service under a special rate, complained that a new rate schedule accepted by the commission was unreasonable and discriminatory. After the Illinois commission and a lower court had dismissed its complaint, the operators appealed to the state supreme court, alleging as an additional error that the commission had improperly permitted the new rates without first finding that the increase was necessary.

The court held that the commission was not in error in permitting the new electric

rates to go into effect without a formal hearing and formal findings and order. Under a statute providing that, in passing upon proposed rate changes, the commission has authority either to suspend the new rates pending formal hearing or permit the rates to go into effect without a formal hearing, the method actually adopted was within the discretion of the commission. A preliminary hearing held by the commission to ascertain the views of interested persons on the proposed rate changes did not have to conform to statutory standards for complaint proceedings.

The new schedule had substituted a standard rate for a special rate formerly charged the operators. The standard rate included, in addition to a charge for the total number of kilowatt-hours consumed within the billing period, a demand charge under which the average cost per kilowatt-hour decreased in proportion to the number of hours electrical equipment was in operation. The standard clause, held the court, was not discriminatory in favor of the commercial mills and against the grist mills, notwithstanding that the latter's machines were idle a greater part of the time.

A demand charge, commented the court, is designed to allocate to a utility's customers their fair portion of those fixed costs which must be incurred by the utility regardless of the amount of power actually supplied, and is a price which must be paid for the construction and maintenance of a plant with sufficient capacity to satisfy customers' demands. Such a charge for the utility's readiness to serve is proper.

A customer receiving the benefit of preferential electric power rates designed to increase off-peak demand may not complain if such rate is discontinued by the company. *Antioch Milling Co. v. Public Service Co. of Northern Illinois, 123 NE2d 302.*

FPC May Not Abrogate Electric Rate Contract without Finding As to Reasonableness

THE United States court of appeals for the District of Columbia reversed a Federal Power Commission order authorizing Pacific Gas and Electric Company, a California corporation, to increase wholesale rates for power furnished to the Sierra Pacific Power Company in Nevada (*Re* Pacific Gas & E. Co. (1954) 7 PUR3d 256). The case was remanded to the commission with instructions either to dismiss the proceeding or to conduct further proceedings under § 206(a) of the Federal Power Act.

Case History

Pacific Gas and Electric has been supplying electric energy to Sierra under a contract rate which was to continue until 1965. It provided a lower rate, approved by the California commission, to enable the company to retain business of customers that would otherwise "be lost altogether" to public power competition. A significant condition of this approval was that any loss from such service was to be borne by the company's stockholders rather than by its other customers.

In 1952, however, when public power was no longer available to Sierra, the company sought approval of higher rates for all of its customers with the significant exception of one city which still could have utilized public power. Sierra intervened in the new rate proceeding, urging that § 205 of the Federal Power

Act, which provides for commission approval of newly proposed rates merely upon a finding that they are reasonable, is not applicable where, as here, approval would effect unilateral abrogation of a duly filed rate contract.

It claimed that to effect such abrogation, the commission must first make the determination, provided for in § 206(a) of the act, that the rate contract to be superseded is unjust, unreasonable, unduly discriminatory, or preferential. The Federal Power Commission had rejected this argument and approved the increased rates upon a finding, under § 205 of the act, that they were reasonable.

Contract Abrogation

The court observed that the question for decision was whether, and to what extent, the pre-existing right of utilities to enter into enforceable rate contracts has been abrogated by the Federal Power Commission's authority under the Federal Power Act to regulate rates. Congress did not expressly abrogate that right. The commission argued that under both §§ 205 and 206(a) of the act the statutory scheme is to depend upon regulatory action and initiative in lieu of private contract to protect the buyers; interest—in the public interest. In rejecting this argument, the court said that this stretches the statutory scheme too far.

The act's primary aim is that only just and reasonable rates shall be charged. Since statutory reasonableness is an abstract quality represented by an area rather than a pin point, the statutory purpose might be satisfied by more than one rate.

The court observed that if contract rates are reasonable, the public interest does not require allowance of higher rates, upon the unilateral application of the seller under § 205, just because the commission deems the higher rates also to be reasonable. It concluded that it does not deprive the statute of its efficacy to give effect to a duly filed rate contract until such time as the rates specified therein are found unreasonable under § 206(a).

The court decided that the commission could not abrogate the existing contract rate upon the unilateral application of Pacific unless it first found that the contract rate was unreasonable. *Sierra Pacific Power Co. v. Federal Power Commission, No. 12430, February 24, 1955.*

Stock Offering to Existing Shareholders Exempted from Competitive Bidding

THE Southern California Edison Company successfully applied to the California commission for an order exempting a proposed issue of convertible debentures from competitive bidding. The company was undertaking a construction program and concluded that it could best meet its requirements for additional capital through the issue and sale of debentures which would be convertible into shares of common stock.

The company planned to accord to the present holders of its outstanding shares of common and preferred stock the opportunity to acquire the debentures and ultimately, through conversion, to acquire the additional shares of common stock. More than 36,500 of the company's 60,000 common shareholders live in California and more than 23,000 in southern California. The company believed that a subscription offering of the type proposed

would provide an avenue through which local ownership would tend to be maintained.

The proposed offering would be limited to the existing shareholders. Any debentures not subscribed would be canceled. There would be no public offering of such unsubscribed debentures. The commission said that, in effect, it was not unlike those offerings which are specifically exempted from the application of its competitive bidding rule, by the terms of the decisions which imposed the rule, where securities are offered pro rata to existing security holders pursuant to a pre-emptive right or privilege. The company's articles of incorporation did not provide for pre-emptive privileges. Consequently, the request for the exemption was made.

In granting the exemption, the commission cautioned that the order should not be construed as one authorizing the issue and sale of the debentures. That authorization will not be forthcoming until the company has made arrangements to sell the debentures at a price and under terms and conditions satisfactory to the commission. *Re Southern California Edison Co. Application No. 36826, Decision No. 51335, April 19, 1955.*

Par Value of Telegraph Stock Reduced

THE Western Union Telegraph Company has been authorized by the New York commission to amend its certificate of incorporation. The net effect of the change would not make any difference in the company's total stated capital. Upon completion of the transaction, however, while nominal par value of the capital stock would be only $2.50 per share, the total capital stock account would equal $20.71 per share, with surplus bringing the book value up to $34.90 per share. The commission held that the transaction was within the realm of managerial discretion and not a violation of the commission's adopted policy.

The commission pointed out, however, that it would not grant the request if it were possible to deplete the fixed capital of the company by transfer by some accounting device. Such action, it said, if not clearly illegal, certainly would be an exhibition of bad faith. The accounting system under which the company operates is not controlled by the state commission. Consequently, the order approving the company's request was conditioned upon an agreement by the company that its capital stock account would be maintained as presently existing, plus any amounts received for additional shares issued.

Commission Policy

The policy followed by the commission in authorizing new issues of capital stock, or in permitting changes in existing issues, was held to be correctly stated by the examiner. It is that stock having a par or stated value of less than $10 a share should not be permitted in the public interest. The facts in this case, however, were held not to bring it within the general rule.

Tax Questions

The commission pointed out that under our tax laws, both state and federal, the capital structure itself and the form of the securities issued may unnecessarily burden either the company or its stockholders. Anyone, corporate utility or otherwise, has the right to conduct his business so that he may legally and legitimately avoid the unnecessary payment of taxes. Con-

cerning this matter, the commission said:

> We have repeatedly stated that a public utility, whose taxes are eventually paid by the public, has not only this right but has the duty, where all other costs are equal, not to adopt the type of capital structure which causes its customers to pay unnecessary costs.

Re Western Union Teleg. Co. Case 17239, April 27, 1955.

Service Ability Basis for Approval of Acquisition

RIVAL applications by two telephone companies to purchase properties and franchises of another telephone company were decided by the Kentucky commission in favor of the company which had a better service record and which could give better service to the selling company's subscribers, with a wider calling area. The unsuccessful applicant had a poor service record and failed to obey commission recommendations that it improve its service and facilities. Evidence indicated that it would be unable to give satisfactory service in the area sought to be acquired.

If the unsuccessful applicant were allowed to purchase the property, its overall costs of operation would be considerably higher than those of the other company.

The successful applicant was a well-qualified operating company which has been rendering good service to its patrons for years. It is a progressive company proceeding to install dial telephone service to present subscribers and to render area coverage throughout the entire area it is authorized to serve.

Evidence indicated that it would also convert the new properties to dial operation, whereas the unsuccessful applicant proposed to continue manual common battery service. Furthermore, it was shown that the successful company would integrate the purchased properties with its other properties. It would allow the customers area coverage over a much larger territory and would be in a position to provide much better long-distance service.

Re Cooper (Vine Grove Teleph. Co.) Case No. 2818, March 30, 1955.

Denial of Rate Increase Affirmed As Court Withdraws Earlier Opinion Reversing Commission Order

AN unusual situation has developed in the controversy as to rates of the Mountain States Telephone Company in Idaho. In December, 1954, the state supreme court issued an opinion reversing a commission decision (6 PUR3d 428) which denied a rate increase, principally because of alleged errors in the separations method used by the commission, the hypothetical debt ratio, and the commission's treatment of working capital and plant under construction. That opinion was summarized in the March 3, 1955, issue of PUBLIC UTILITIES FORTNIGHTLY at page 286. On April 15, 1955, the court withdrew this opinion and issued a new decision affirming the commission's findings. The company has sought another rehearing, alleging mathematical errors.

Separations Procedure

The desirability of a uniform method of separating interstate and intrastate properties and expenses, the court said,

is perfectly obvious, and the Separations Manual, with the Charleston amendments, is a good start towards that end. However, the court continued, that goal has not been attained and further studies are necessary.

The court reviewed the situation which made the Charleston modifications necessary. After criticisms and protests from state commissions, the Federal Communications Commission suggested the Charleston amendments to meet objections that the plan resulted in toll rates that were higher for intrastate messages than for interstate communications. But the proposed remedy did not, according to the court, fully correct the inequities.

Commission Discretion on Separations

The court said it was entirely within the province of the commission to determine whether the procedures provided by the Separations Manual would result in a reasonable and just rate base and, therefore, whether or not these procedures would be followed. Since the commission rejected the plan, the court was concerned only with the question whether the alternate method adopted by the commission was within its authority and whether its conclusion resulted in confiscation.

The commission, after rejecting the manual, had allocated to intrastate 75.21 per cent of the company's entire plant based on the peak period of interstate use in August, 1952. The company argued that this resulted in a portion of property and expense being unrecognized by either federal or state authorities. Consequently, the company would be denied a return on such property.

Responsibility for Confiscation

The court replied that if this were so, it would be equally apparent that if the state commission had arrived at a proper separation of property and expenses and had allowed a fair return upon the resulting intrastate base, confiscation, if any follows, would have to be charged to the action of the federal agency.

The state urged that since the evidence before the commission showed that the investment in facilities to handle interstate business was required to be sufficient to handle the peak load, any failure to allocate to interstate use the property devoted to interstate business on the basis of full capacity would result in taking the idle portion of the company's interstate property out of the interstate rate base and putting it into the intrastate base and thereby putting an unjust burden on the intrastate user.

"Such a conclusion," the court said, "may not be entirely accurate, since, theoretically at least, the company might be able to reduce the operating expense during low periods of interstate use." However, the court continued, "we cannot say that the commission acted arbitrarily or that its action was unreasonable; nor can we say that it ignored other factors such as distance and minutes of use, because other exhibits also prepared by the company were in evidence containing information as to these factors."

These exhibits would furnish a basis for computation by the commission upon the percentage of allocation which it decided upon and adequately established that the commission did not act on number of calls alone. Minute miles and other factors were considered. The use of peak period of interstate business for this allocation has been supported by other courts and commissions.

Working Capital Allowance

The commission's action in disallowing a proposed working capital allowance

of approximately one-half million dollars was not disturbed. In view of the company's advance billing for exchange service, a substantial accrual in its account for future taxes, its access to a loan account pool established by its parent company, and the full allowance by the commission of the requested materials and supplies allowance, the commission's action did not appear arbitrary or unreasonable.

Plant under Construction

The court made a similar finding regarding the commission's exclusion of plant under construction from the rate base. The court said that it was a legislative function to determine whether such an item should be included and a question of policy wholly committed to the judgment and discretion of the commission.

Capital Structure

The commission's action in making a computation of earnings upon the assumption of a capital structure of 45 per cent debt and 55 per cent equity, with 3¼ per cent interest allowed on debt, and $7 per share dividend, and based upon a pay-out of 90 per cent of earnings was not considered arbitrary or unreasonable. The company's actual structure was 30.8 per cent debt and 69.2 per cent equity, and actual interest cost of debt was 2.95 per cent.

Return Allowance

The final order, the court said, would allow a return of 5.71 per cent at existing rates, based upon the capital structure which the commission found to be reasonable. Considering the burden of proof which a utility seeking a rate increase carries and the state of the record, the court did not consider such a return confiscatory. *Re Mountain States Teleph. & Teleg. Co. No. 8194, April 15, 1955.*

Decision on Return Allowance Remanded and Depreciation Rulings Sustained in Rate Case

AFTER reviewing a commission order establishing gas rates, the Pennsylvania superior court remanded the case to the commission with instructions to determine the reasonableness and lawfulness of the rate structure and a proper rate of return.

Industrial consumers had complained that the new rate structure unduly discriminated between smaller industrial consumers and larger ones; that in increasing the rates, the same percentage increases should have been applied to the respective blocks. The court first commented that the use of block-type rates, whereby consumers pay at a lower rate as consumption increases—that is, passes from one block to another—is generally fair and reasonable. Such a structure should allocate equitably basic fixed charges to the cost of delivery of gas at a given point.

The court was of the opinion that present tariffs were not automatically discriminatory merely because they differed in pattern from the previous tariffs. A difference in rates between classes of customers upon the basis of the quantity of gas used was permissible and would ordinarily be within the flexible limit of judgment belonging to the body having the power to fix rates.

However, nothing in the record showed upon what basis or for what reason the

difference in the various blocks was determined. Since no ascertainable consistency could be found in the record for the changes from the old to the new rates, the court was unable to determine whether the discrimination existing in the tariff was reasonable.

Double Allowance for Risk

The commission had allowed a return of 6½ per cent. In fixing this return, the commission had made an allowance above the cost of capital for normal risks and uncertainties, after having considered the same risks and uncertainties in fixing the cost of capital. Although rate of return is not always synonymous with cost of capital, said the court, the reasons given by the commission for an allowance above the cost of capital—that is, normal risks and uncertainties associated with financing in the capital markets—were in error. Having once considered these factors affecting capital costs and having made an allowance therefor, the commission could not gratuitously make a further allowance for good measure.

The commission's ultimate finding as to the rate of return was inconsistent with its basic finding. True, the commission was granted an area of discretion in making estimates and adjustments and was not restricted to unreasonably narrow limits. At the same time it could not make double allowance for the same factors such as fluctuating capital costs, and it could not make adjustments, additions, or subtractions as a matter of policy without support in the evidence. In a rate case, the commission's findings must be definite, consistent, supported by the evidence, and sufficient to enable the reviewing court to determine the legal questions involved. The commission was directed to make proper findings on the rate of return.

Accrued and Annual Depreciation And Depletion

The court defined depreciation as the loss, not restored by current maintenance, which was due to all the factors causing the ultimate retirement of property. These factors embrace wear and tear, decay, inadequacy, and obsolescence. Although a utility's depreciation reserve could represent the actual accrued depreciation, this was seldom if ever the case, since book reserve representing an historical accumulation is arrived at by various methods which may or may not reflect the mortality which actually has occurred. To determine the fair value, accrued depreciation must be deducted from the various measures of value which have been presented, while annual depreciation is an allowance to be made each year as an operating expense.

A properly determined reserve requirement study might be the best practical measure of depreciation. Such study is an analysis of the utility's recent experience in retiring from service its units of property for various causes and is based on present-day knowledge and judgment concerning lives of property. A reserve requirement study should present a true current annual depreciation expense chargeable to present cost of service. Using the reserve requirement study to calculate accrued depreciation should disclose the consumption of property to date.

The book reserve offered in evidence by the utility showed higher depreciation and depletion than that shown by the reserve requirement study. The commission had concluded that the utility's book reserve was not reliable and that it did not afford a proper basis for calculation. Rejecting such book reserve, the commission had based its findings on the reserve requirement study.

The court commented that the commis-

sion, within the sphere of its authority, could have accepted the utility's book reserve if convinced of its reliability and accuracy.

But the state commission was not bound to accept any particular method. The commission did not err, held the court, in basing its depreciation findings on the reserve requirement study instead of the utility's book reserve.

Likewise, no error was committed, in determining the annual depreciation, by again giving full weight to the reserve requirement study. Accrued and annual depreciation should be calculated on a reasonably consistent basis, stated the court. The commission was not obligated to apply the remainder life theory because of the excess in the company's book reserve as disclosed by the reserve requirement study. *City of Pittsburgh v. Pennsylvania Pub. Utility Commission, 112 A2d 826.*

Stock Purchase in Lieu of Construction Contribution Not Satisfactory

A TELEPHONE company had offered to subscribers and potential subscribers the opportunity of purchasing stock in the company in lieu of contribution for construction. Many individuals purchased such stock and later complained that their service had not been improved. Some purchased the stock upon the representation that they would be supplied with telephone facilities but no such facilities had been constructed.

The Montana commission, in authorizing additional revenue which would produce a return of approximately 3.4 per cent, commented that the offering of stock in lieu of contributions was not a satisfactory manner in which to finance construction, since the purchase of stock did not carry with it a guaranty that service would be provided immediately by the company.

Notwithstanding that the company's management had authorized the repurchase of any stock outstanding which the owners thereof desired to sell back, the commission felt it only proper to order a refund unless the company completed the promised improvements. *Re Treasure State Utilities Corp. Docket No. 4242, Order No. 2492, February 18, 1955.*

Cost of Capital As Return Factor Examined by Federal Power Commission

THE Federal Power Commission affirmed in modified form an initial gas rate decision of a presiding examiner. Natural Gas Pipeline Company of America had sought higher rates to recoup added wholesale costs.

One of the exceptions by staff counsel was to the granting of a motion by the company to withdraw testimony relating to gasoline and other hydrocarbon extraction and purporting to demonstrate that their removal was unnecessary for the purposes of pipeline transmission. The company, said the commission, has the burden of proof to demonstrate that a rate increase is justified and it has a freedom of choice, within limits, to determine the basis upon which it is willing to submit its case. The commission, in view of the circumstances, perceived no substantial

reason for overruling the examiner in this respect.

Refund of Impounded Funds

The commission agreed with a contention by staff counsel that the company pay interest upon impounded funds refunded. The commission amended the examiner's decision to provide that refunds of amounts collected in excess of rates approved by the commission should be distributed, together with interest at 6 per cent, from date of receipt until date of refund. The company was required to bear all costs incident to making such refunds.

It was further provided that in the event the company should receive any refunds from a wholesale supplier, the company should forthwith submit to the commission for its approval copies of a plan for distribution of the refund.

Cost of Debt Capital

A return of 6 per cent rather than 6.1 per cent as approved by the examiner was allowed. The use of the estimated current cost of debt money had been criticized. Utilization of 3.6 per cent as such current cost, said the commission, ignored the actual cost of the company's outstanding debt of 2.68 per cent.

Moreover, reliance was placed upon an estimated cost of 3.6 per cent when comparable natural gas companies recently had issued debt securities at costs no higher than 3.25 per cent. It was said that even if the company were to double its outstanding debt at a cost of 3.6 per cent —which was claimed to be the current cost—the resultant cost of the then outstanding debt would still be only 3.14 per cent, considering the actual cost of outstanding debt of 2.68 per cent.

The commission said that, although it had been urged by other companies to disregard the cost of outstanding debt and to consider solely current cost, it had refused to do so, and it found no reason to depart from its considered practice and from consistent determinations respecting debt money.

Cost of Equity Capital

All the outstanding common stock of Natural is held by the Peoples Gas Light & Coke Company, the distributor of natural gas in Chicago. There were, therefore, no market quotations available. The commission said that to determine the proper rate to be assigned to common equity, it was necessary to make a study of investors' requirements in common stocks of natural gas companies engaged in the transportation and sale of natural gas, as well as of Peoples, and of Texas Illinois, also an affiliate of Peoples.

In this regard, the commission continued, it was not unmindful of the sheltered position of Natural. It sold to Peoples and to two other companies which distributed natural gas in the thickly populated and highly diversified and industrialized Chicago metropolitan area, which made for a stable market. Sales to these companies comprised over 85 per cent of Natural's revenues. These facts materially reduced basic business risks.

The examiner had found 8.6 per cent to be the proper measure of the cost of equity based upon a study by Natural's witness of twelve natural gas companies during the period 1948-52. He concluded that the return upon equity capital proposed by Natural of 10.5 per cent appeared as high and untenable as the claim of the city of Chicago that the compensation for use of equity should not be in excess of 7.73 per cent.

The evidence of record demonstrated that, upon the basis of Natural's most recent capital ratios of record, a 6 per cent

rate of return, after consideration of all taxes, would provide for the capital costs of Natural and for a return to Peoples of 9 per cent on the common equity.

Determining Rate of Return

Counsel for the city of Chicago and counsel for the staff also questioned the basis and method underlying the rate of return determination in the examiner's decision. The commission in previous proceedings had allowed a rate of return of 6 per cent for Natural. The examiner approved a rate of approximately 6.1 per cent determined upon the conclusion that, since 6.1 per cent exceeded 6 per cent by only one-tenth of one per cent, the difference did not constitute a material departure from the rate of return previously allowed.

The commission observed that a difference so slight does not, in and of itself, represent the difference between a fair and an unfair return. Experience has shown that actual earnings of natural gas companies seldom coincide with projected earnings because of the influence of unpredictable factors.

The commission referred to the fact that many times it had said that there is no exact or fixed formula for determining a reasonable rate of return. The return must be fixed, in the final analysis, upon the commission's best judgment of what is fair, considering the evidence of record and guided by the basic facts required by law to be considered.

The commission referred to the Bluefield Water Works & Improvement Company Case (PUR1923D 11) and the Hope Natural Gas Company Case ([1944] 51 PUR NS 193). The requirements stated were that consideration be given to returns earned by like investments which are attended by corresponding risks and uncertainties. Determination of what is a fair and reasonable rate of return requires more than a mere comparison of what has been allowed before and what the result of proposed rates means in terms of rate of return. *Re Natural Gas Pipeline Co. of America, Docket No. G-2302, April 1, 1955.*

Community of Interest Factor in Relocation of Telephone Exchange Boundaries

A MUNICIPALITY had petitioned the Massachusetts department to make a telephone company's exchange boundaries coincide with the municipal boundaries. Where there is no intervening community of interest between users located near municipal boundaries and users in a foreign town, in the opinion of the commission, it is desirable that the exchange boundaries coincide with municipal boundaries. In that way, all municipal services such as fire and police protection and other functions such as tax assessment and collection, road work, and general government, are facilitated. It is also desirable generally that the post office address coincide with the exchange area so that persons desiring to call from outside may have some indication as to the correct directory within which to look for the called number.

On the other hand, stated the commission, community interests do not always coincide with municipal boundaries, in which case that becomes the controlling factor. Here, no line could be drawn that would satisfy everyone. Since the users held strong and varied opinions, the com-

mission had the duty of relocating the boundaries as best it could to meet the wishes of as many people as possible with as little interference with service as possible. The company had indicated that it would only take issue with the commission's determination if it were required to duplicate its plant as between exchanges. *Re New England Teleph. & Teleg. Co. DPU 11244, March 30, 1955.*

Other Recent Rulings

Service Obligation. The New York supreme court held that a telephone company, which placed an applicant for residence service in a preferred category pursuant to its filed rules and regulations, could not be required to furnish such service immediately, where a shortage of facilities in the area precluded immediate service. *Zuckerman v. New York Teleph. Co. 138 NYS2d 465.*

Additional Service Denied. The Pennsylvania commission denied a request by the commuters of a railroad for additional and more adequate passenger service between certain points, commenting that additional patrons which might be attracted by improved schedules and equipment would be insufficient in number to justify requiring the company to multiply its already heavy operating costs. *Borough of Oakmont et al. v. Pennsylvania R. Co. Complaint Docket Nos. 16024, 16070, March 7, 1955.*

Express Agency Discontinued. The Missouri commission, in authorizing the discontinuance of an express agency upon a showing that public convenience and necessity no longer required the continuance thereof, commented that the fact that an office is operating at a loss is not the controlling factor. *Re Railway Express Agency, Inc. Case No. 13,007, March 3, 1955.*

Return for Telephone Company. A return of 6.25 per cent on a telephone company's average net investment rate base was considered adequate by the West Virginia commission. *Re Central Teleph. Co. Case No. 4126, January 31, 1955.*

Passenger Train Discontinuance. The Wisconsin commission authorized a railroad to discontinue operation of certain passenger trains where the company's operating losses clearly outweighed the inconvenience which would result to the patrons from the discontinuance. *Re Chicago, M. St. P. & P. R. Co. 2-R-2863, February 14, 1955.*

Protection at Crossings. A commission order directing the installation of flashing lights and a short-arm gate at a crossing was not considered against the weight of the evidence by the Illinois supreme court, where it appeared that the crossing was extra-hazardous and was located in a densely populated unincorporated area used by numerous students and school buses, plus other vehicular traffic. *Centerville Township v. Illinois Commerce Commission, 124 NE2d 882.*

Partial Abandonment. The Maryland commission will not permit a transit company, seeking authority to discontinue a part of its service, to treat one portion of a line as a separate entity and in that way prove that the operation is conducted at a loss where it is conceded that the line as a whole is a profit-producing operation. *Re*

Baltimore Transit Co. Case No. 5360, Order No. 51390, April 29, 1955.

Open Territory. A portion of the certificated area of a telephone company was declared open by the Oklahoma commission without any time being afforded for the company to meet the demands of the public, where it appeared that the public was not consulted when the company filed the map which included the area in question, and that the company could not profitably or reasonably furnish the service sought by the public because of the lack of a community of interest. *Re Southwestern Bell Teleph. Co. Cause No. 20884, Order No. 29811, February 4, 1955.*

Refusal to Serve. The Massachusetts department, in upholding a telephone company's refusal to serve an applicant it had been informed by a law enforcement agency would use the instrument for illegal purposes, commented that the good faith of the agency's action was a question for determination by a judicial tribunal, and not the commission. *Re New England Teleph. & Teleg. Co. DPU 11247, April 13, 1955.*

Condemnation Order Upheld. The supreme judicial court of Massachusetts held that an order of the department of public utilities authorizing a natural gas pipeline company to take, by eminent domain, easements for its pipeline did not become unlawful retroactively when the company's Federal Power Commission certificate was temporarily set aside by a federal court. *Tatten et al. v. Department of Public Utilities, 125 NE2d 394.*

Comprehensive Route Maps. The Rhode Island board committed no error, held the supreme court, by refusing to order bus companies to publish comprehensive route maps, where the evidence showed that such maps were not required by the general public. *Berberian et al. v. Public Utility Hearing Board, 112 A2d 876.*

Important Notice

The limited number of pages of full-text decisions which formerly appeared in this position in this magazine, under the title of "Preprints of Cases to Appear in Public Utilities Reports," will no longer be published in that form. (See explanation in "Pages with the Editors.") Instead, a new service, known as "Advance Sheets—Public Utilities Reports, 3d Series," is being offered, which will assure its subscribers of more prompt and complete reporting of full-text decisions, including those which formerly had to be omitted from PUBLIC UTILITIES FORTNIGHTLY *because of space limitations.*

In this connection, it will be noted that the foregoing department—"Progress of Regulation"—has been expanded to include summaries and analyses of a larger number of important cases in a form designed to be of greater service and interest to all readers of the FORTNIGHTLY. *In order to accommodate this broader coverage, full-text reports of decisions will be omitted from this publication.*

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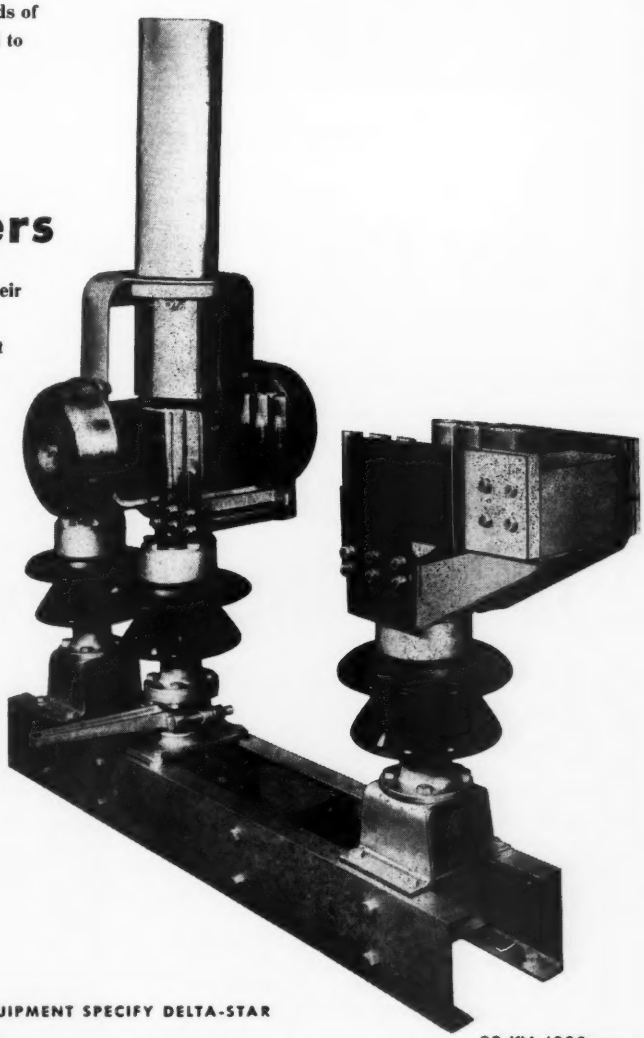

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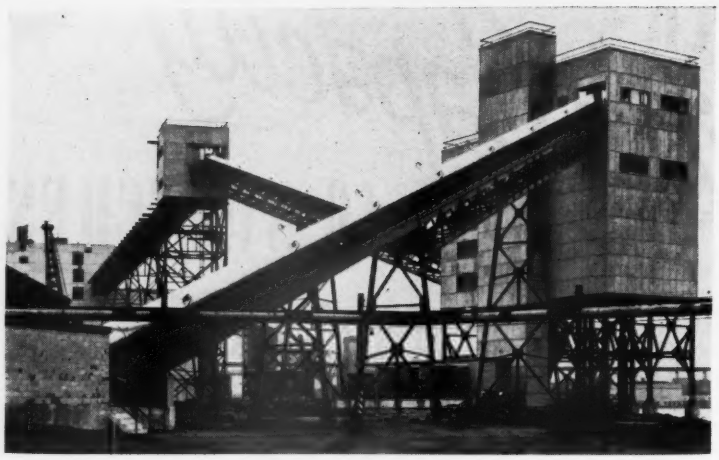

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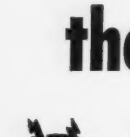

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Industrial Progress

Electric Utilities Report Continuing Expansion Programs

In order to meet the steadily increasing demand for industrial, commercial and residential service, the electrical industry is continuing to pursue its comprehensive facility expansion program. Evidence of this tremendous construction effort is observable in virtually every community and every section of the country.

Holders of utility stocks make this expansion possible. Their investments provide the funds for new capital construction. It is quite natural, therefore, that the electric companies, through the medium of annual reports, keep the investors well informed on construction progress. The annual reports for 1954 are cited as excellent examples.

The excerpts below, culled from electric utility annual reports, illustrate the extent of the electric facilities expansion already underway, and current plans for completion in 1955 and for future years.

Alabama Power Company, Birmingham, Ala. Investment in utility plant, representing generating plants, lines and other facilities, amounted to $378,495,475 as of December 31, 1954, an increase of 8.0 per cent. The completion of Barry steam plant brought the company's total installed generating capacity to 1,379,700 kw, of which 890,000 kw is in steam generating capacity and the remainder in hydro.

American Gas and Electric Company, 30 Church st., New York, N. Y. Construction expenditures in 1954 were $85,460,000, the fourth highest in the system's history, raising the total for the 8 years 1947-54 to $684,800,000. During the year the system added 430,000 kw of steam-electric generating capability. It is predicted that the AGE system will experience a peak load of 3,550,000 kw in 1955, four times that of the 1939 peak, with the further projection that the demand will quadruple again within the relatively short period of 20 years.

Arizona Public Service Company, Phoenix, Ariz. More than $26,600,000 was spent last year on new construction for additions and improvements to electric, gas and water facilities. The first 100,000 kw unit of the Saguaro plant was placed in service and a second unit of the same size is expected to be completed and in service in time to meet the summer peak electric load in 1955.

Arkansas-Missouri Power Company, Blytheville, Ark. Total additions and improvement to the company's electric system in 1954 amounted to $1,294,000. The company's total investment in facilities is over five times that of ten years ago.

Arkansas Power & Light Company, Little Rock, Ark. During 1954, the company's construction cost $24,414,000 which was second only to the $41,800,000 construction cost of 1953—a peak year for expansion. New 135,000 kw turbogenerators were placed in operation at the Cecil S. Lynch and the Harvey C. Couch steam-electric stations. Each unit is capable of producing more power than the company's entire territory required prior to World War II. The 1955 construction program is estimated to cost approximately $17,500,000.

Atlantic City Electric Company, Atlantic City, N. J. Increasing demands for electric service necessitated continuation of expansion. Funds expended for construction in 1954 totaled $17,714,000 of which $7,771,000 was spent to place in service the new 75,000 kw turbogenerating unit at the Deepwater station. The construction program for 1955 will cost approximately $12,616,000.

Boston Edison Company, Boston,

(*Continued on page* 44)

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Supplies electric service to the rapidly growing Black Hills Area in Western South Dakota and Eastern Wyoming

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1949	$2,509,264	$413,750	$83,700	$202,440
1950	2,849,802	501,973	83,207	259,110
1951	3,169,838	469,325	80,747	259,110
1952	3,463,445	503,552	78,046	291,491
1953	3,841,185	549,210	75,891	302,285
1954	4,229,342	604,796	74,230	320,333

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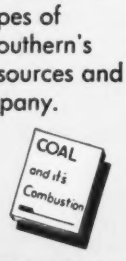

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INDUSTRIAL PROGRESS
(*Continued*)

Mass. This company continued to carry forward its expansion of facilities, with expenditures in 1954 amounting to $19,256,985. Generating unit No. 6 at Edgar station, with a capability of 90,000 kw was placed in commercial operation, bringing the total system capability to 846,300 kw. Ground was broken at Mystic station for the next major project in expansion of generating facilities. The present capability at Mystic is 165,000 kw, in three 55,000 kw units. The next unit, known as Mystic No. 4, will have a capability of 140,000 kw.

California Electric Power Company, Riverside, Cal. Total electric construction in 1954 was $7,698,000. The construction program for 1955 calls for an expenditure of over $11,000,000 including $3,746,000 for the completion of unit 4 of the Highgrove steam plant.

The California Oregon Power Company, Medford, Ore. In order to meet present and future load requirements, the company spent $12,196,058 in 1954 for additions and improvements. Construction was continued on the Lemolo No. 1 and No. 2 hydroelectric plants on the North Umpqua river, and further investigations were made in connection with proposed plant development on the Klamath and McCloud rivers. It is estimated that gross additions will approximate $10,000,000 in 1955.

California-Pacific Utilities Company, San Francisco, Cal. Expenditures for new construction in 1954 totaled $1,952,100. Outstanding improvements completed in 1954 included installation of additional substation capacity totaling 5,500 kw, and construction of a 69,000 volt line bringing Bonneville power to Eastern Oregon.

Carolina Power & Light Company, Raleigh, N. C. Expenditures for construction during 1954 were $24,838,000. Expenditures since World War II aggregate approximately $141,000,000. Capability of the company's generating plants during this period has increased 142 per cent. The 1955 construction program is expected to cost approximately $22,000,000.

Central Illinois Electric and Gas Company, Rockford, Ill. Construction expenditures for 1954 were approximately $4,738,000. A major portion of the 1954 expenditures was attributable to work on the 30,000 kw turbine generator addition to the Sabrooke station in the Rockford area, the Rockford 69 KV system and the Rockford service building. Esti-

mated construction expenditures for 1955 total $5,900,000.

Central Illinois Light Company, Peoria, Ill. The past year, in the field of construction, was mainly one of enlarging and strengthening of transmission and distribution facilities. Total expenditures were $5,107,828, with $2,912,173 of this amount for electric facilities. The company has a three-year plan for enlarging electric facilities involving an estimated $20,000,000.

Central Louisiana Electric Company, Inc., Alexandria, La. Construction expenditures for the year 1954 aggregated $4,927,534. Of this amount, $4,328,978 was for electric facilities. Construction work was actively commenced for the installation of a 54,000 kw electric generating unit in the Teche power station at Baldwin. The company's construction budget for the year 1955 amounts to $8,560,000 of which $7,386,200 is for the electric department.

Central Maine Power Company, Augusta, Me. Expenditures for new construction and replacements were $17,016,715 in 1954. The first two units at Harris station, having 45,000 kw total capacity, were placed in operation. Work continued on the third unit of 30,000 kw capacity which is scheduled for completion in late 1955. An additional 30,000 kw steam-electric unit at Mason station was started. Completion is scheduled for late 1955.

Central and South West Corporation, Wilmington, Del. The construction program of subsidiary companies (Central Power & Light Company, Public Service Company of Oklahoma, Southwestern Gas and Electric Company and West Texas Utilities Company) proceeded at a high level during the year with expenditures amounting to approximately $59,000,000. In 1954, new generating units of approximately 201,000 kw of capability were completed. Record construction expenditures of approximately $142,500,000 are budgeted for the two years, 1955 and 1956. About $55,000,000 of this total will be spent on generating facilities.

Central Vermont Public Service Corporation, Rutland, Vt. Expenditures in 1954 for additions, replacements and improvements totaled $2,540,500. The largest single project was the construction of the 45-mile transmission line from Middlebury to Milton connecting its central system with the former Public Electric Light Company system in northwestern Vermont acquired in 1953.

The Cincinnati Gas & Electric

(*Continued on page* 46)

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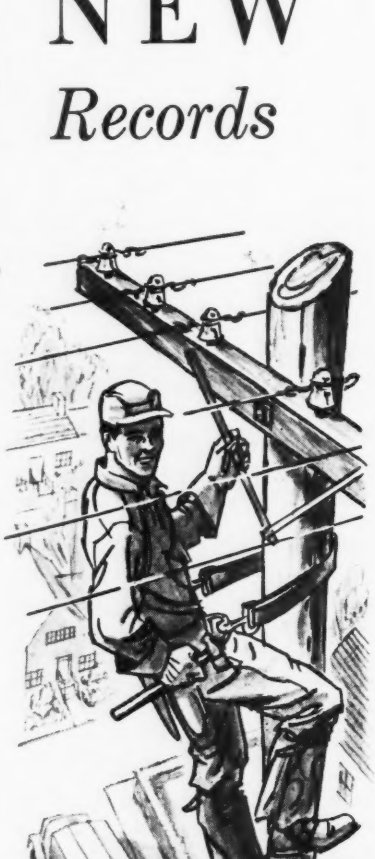

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Company, Cincinnati, Ohio. Construction expenditures in 1954 amounted to $30,304,000 of which $12,945,000 was for the third unit of 125,000 kw capacity at the Walter C. Beckjord station. This unit, which completes the station as planned for the present, went into commercial operation in November, giving the station a total capacity of 325,000 kw. Construction costs for 1955 are estimated at $17,700,000, including $12,700,000 for the electric department.

The Cleveland Electric Illuminating Company, Cleveland, Ohio. Steady progress was maintained in enlarging and improving the electric system during 1954, with construction expenditures totaling $27,535,000 for the year. The third of three 140,000 kw turbogenerators was placed in service at the Eastlake power plant. Gross construction expenditures since World War II total $237,000,000. Further expansion in the amount of $160,000,000 is foreseen for the five-year period through 1959.

Columbus and Southern Ohio Electric Company, Columbus, Ohio. The fourth generating unit, 66,000 kw, at Poston station was placed in service in 1954, increasing the system's installed generating capacity to 460,000 kw. The new 100,000 kw generating unit at Picway station is expected to be placed in operation late in 1955. It is presently estimated that the company's expansion program will require expenditures approaching $20,000,000 in each of the next three years.

Commonwealth Edison Company, Chicago, Ill. Construction expenditures in 1954 amounted to $121,231,436. Of this amount $50,213,178 was for electric generating plant, $68,992,013 for electric transmission and distribution facilities and $2,026,245 for general plant. Planning through 1958 calls for the expenditure of $125,000,000 in 1955, $90,000,000 in 1956, $105,000,000 in 1957 and $100,000,000 in 1958—a total for the four years of $420,000,000.

The Connecticut Light and Power Company, Berlin, Conn. Expenditures in 1954 for additions and improvements to property and equipment approximated the 1953 all-time peak, totaling $28,700,000. During the year 88,000 kw were added to generating capacity, an increase of about 19 per cent. The company has a continuing extensive construction program amounting to $33,000,000.

The Connecticut Power Company, Hartford, Conn. During 1954 a total of $6,300,000 was expended

for improvements, additions and replacements with $5,900,000 for electric facilities. The company's current construction budget, including $2,500,000 to complete work in progress, is $5,400,000.

Consolidated Edison Company of New York, Inc., 4 Irving pl., New York, N. Y. Construction expenditures during 1954 totaled $84,000,000. Work completed during 1954 included the installation of a second 180,000 kw turbine-generator unit at the Astoria generating station. Expenditures for 1955 are budgeted at $95,000,000 and are forecast for the five-year period 1955-1959 at $425,000,000.

Consolidated Gas Electric Light and Power Company of Baltimore (now Baltimore Gas & Electric Company), Baltimore, Md. Construction of additional facilities required the expenditure of $28,798,000 during 1954. The major part of this total was spent on electric construction work which amounted to $20,649,000. The largest single project now in progress is the construction of the initial 125,000 kw electric generating unit at the new Herbert A. Wagner station.

Consumers Power Company, Jackson, Mich. The continuing growth of the area and the increasing use of electric and gas service has required the continuing expansion of facilities. The 1954 expansion expenditures amounted to $62,794,700 of which $47,329,300 was for electric property. The construction program for 1955 will be approximately $75,000,000.

The Dayton Power and Light Company, Dayton, Ohio. After seven years of intensive effort to "stay ahead," the 1954 construction program tapered to an annual expenditure of less than $12,000,000. The reduction was in facilities for electric generation and transmission. It is reported, however, that continued growth, will require sizable expenditures for new electric facilities.

Delaware Power & Light Company, Wilmington, Del. Expenditures for construction during 1954, amounting to $16,540,666, were exceeded in only one prior year. Major accomplishments included the completion of a third electric generating unit at the Edge Moor power plant and the completion of a new transmission line from the Basin road substation located near Wilmington to a new substation at Millington, Maryland.

The Detroit Edison Company, Detroit, Mich. Additions to property in 1954 amounted to $73,480,447. The total generating capability of the system was raised to two and a half million kw. A highlight of the year was the start-up of the fourth turbine-generator at Edison's St. Clair power plant on October 21st—the 75th anniversary of the electric light—which enabled the United States electric industry to pass the 100 million kw mark in generating capacity. It is estimated that about $85,000,000 will be needed for construction in 1955.

Duquesne Light Company, Pittsburgh, Pa. Expenditures for property in 1954 amounted to $33,600,000, thus bringing the expenditures under the company's postwar construction program to a total of approximately $207,000,000. The installation of capacity presently planned for Elrama, the company's newest station, was completed by the addition of the third unit which has a capability of 120,000 kw. It is expected that the fourth unit at the Phillips station will be completed in the latter part of this year. This unit will have a capability of 150,000 kw.

Eastern Utilities Associates, Boston, Mass. Expenditures for construction by the system's four subsidiaries

(*Continued on page* 48)

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during 1954 totaled $4,152,000. Construction requirements for the year 1955 are estimated at $4,500,000.

Edison Sault Electric Company, Sault Ste. Marie, Mich. The 1955 construction program is estimated to cost approximately $700,000. The major item included in this figure is a new 1500 kw diesel generating unit to be installed at the St. Ignace station. Amount expended for property additions and improvements in 1954 was $589,140 compared to $496,242 in 1953.

El Paso Electric Company, El Paso, Texas. The company expended a total of $5,844,800 for construction of new facilities in 1954. The Rio Grande power station installation of the 36,000 kw unit was completed and placed in service.

The Empire District Electric Company, Joplin, Mo. Construction expenditures were approximately $4,000,000 in 1954 including $1,000,000 to complete the new generating unit at the Riverton plant. Since 1944 the company has spent over $32,000,000 for enlargement and improvement of facilities.

Florida Power Corporation, St. Petersburg, Fla., and subsidiary, Georgia Power and Light Company, Valdosta Ga. During 1954, the third 45,000 kw unit of the Higgins plant and the second 31,000 kw unit of the new Suwannee river plant went into service. Ground was broken for a new 70,000 kw unit for the George E. Turner plant. This unit is scheduled to come into service in November, 1955.

Florida Power & Light Company, Miami, Fla. Last year, FP&L spent a record-breaking $41,700,000 on the expansion of its generating transmission and distribution facilities. The company plans to have 1,662,000 kw by the end of 1961 and estimated construction expenditures for the 10-year period 1951-1961 will amount to $410,000,000.

General Public Utilities Corporation, 67 Broad st., New York, N. Y. Based on present construction estimates, 1955 expenditures for new facilities by its five domestic subsidiaries operating in New Jersey and Pennsylvania will amount to about $51,000,000.

Georgia Power Company, Atlanta, Ga. Out of a total investment of $32,394,305 in new construction in 1954, more than $13,000,000 was spent on new generating plants. The completion of two 100,000 kw steam-electric units and the continuation of work on a third 100,000 kw unit at plant Hammond accounted for the major part of this expenditure. The third unit is scheduled for completion in 1955. Construction plans for the next three years call for the investment of approximately $100,000,000.

Gulf Power Company, Pensacola, Fla. During the past five years, expenditures totaling some $36,000,000 have been required for new construction. At the end of 1954, two-thirds of all the company's facilities have been installed since 1949. It is estimated that the 1955 construction expenditures will be some $3,655,000—approximately the same level as in 1954.

Gulf States Utilities Company, Beaumont, Texas. Expenditures for system expansion in 1954 totaled $16,462,294, bringing to $177,144,474 the amount spent on construction since the beginning of 1947. A new four-year estimate of necessary construction costs for the period 1955 through 1958 amounts to approximately $80,000,000. Of this amount, the year 1955 is estimated to require $23,300,000. This includes $9,218,000 toward the completion of a new 100,000 kw addition at the Neches station.

The Hartford Electric Light Company, Hartford, Conn. In 1954, about $7,500,000 of net additional plant was added to the company's property through new construction. The increase in 1954 consists of $3,650,000 in generating station and $3,850,000 in new distribution and other facilities. The construction program for 1955 will be about $5,200,000.

The Housatonic Public Service Company, Derby, Conn. The 1954 construction program produced a net increase of $1,015,141 in utility plant. To take care of expanding needs, expenditures will be necessary for reinforcement of existing facilities and construction of additional facilities. It is estimated that such expenditures for 1955 will be $1,587,400.

Houston Lighting & Power Company, Houston, Texas. 1954 was the greatest single year of expansion in the company's history. New facilities aggregating $41,903,584 were installed. Two 100,000 kw units of the new Webster station were brought into operation. The year-end system capacity of 1,015,000 kw amounts to

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a four-fold increase in the 10-year period ending with 1954. A substantial construction program is planned for 1955 and 1956.

Idaho Power Company, Boise, Idaho. Construction expenditures, which amounted to $6,216,866 during 1954, are anticipated to total $7,554,800 in 1955. It is reported that demand for electricity from the company's system in the past 10 years has increased more rapidly than for any other electric utility system in the Pacific Northwest. To meet this demand, the company has increased its system generating capacity by 3½ times. It anticipates that the demand will more than double again within the next 10 years.

Interstate Power Company, Dubuque, Iowa. In 1954, construction expenditures amounted to $4,417,700. The 1955 construction expenditures are estimated to be $5,279,000. This construction program includes the beginning of the installation of a 33,000 kw steam electric generating unit and boiler at the Lansing, Iowa plant which will more than double the capacity of the plant. Present estimates indicate construction budgets of about $7,000,000 in 1956 and $6,500,000 in 1957.

Iowa Electric Light and Power Company, Cedar Rapids, Iowa. Gross additions to plant in 1954 aggregated $11,144,378. Of this sum, $6,574,657 was spent on the new Sutherland steam-electric station consisting of two 30,000 kw turbogenerators and high pressure boilers, the total cost of which will be approximately $12,000,000. Additional facilities will require an estimated expenditure of about $12,700,000 in 1955.

Iowa-Illinois Gas and Electric Company, Davenport, Iowa. Construction in 1954 continued at high level with the total amounting to $9,643,762. In the electric department, the largest single project under construction in 1954 was unit No. 7 at the Moline generating station. A total of $7,090,000 is budgeted for 1955, with $4,710,000 earmarked for the electric department.

Iowa Power and Light Company, Des Moines, Iowa. Two new electric generating units were placed in service during the spring of 1954. The first of these was a 70,000 kw unit at Des Moines power station No. 2. The second was a 50,000 kw unit at the new Council Bluffs power station. Present planning contemplates the installation of a 75,000 kw reheat unit for May, 1958 service.

(*Continued on page* 50)

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Iowa Public Service Company, Sioux City, Iowa. Total expenditures for property and plant additions in 1954 were $8,430,041. Electric property added amounted to $5,063,474, or 60 per cent of the total. Present plans indicate an expenditure of approximately $8,000,000 in 1955.

Jersey Central Power & Light Company, Asbury Park, N. J. For the past five years the company's gross construction expenditures were approximately $65,000,000, almost four times as much as in the previous five-year period. When the 1955 construction program of $18,200,000 is completed, gross expenditures from 1946 through 1955 will amount to approximately $100,000,000. With the addition this year of the 137,500 kw extension to the Raritan river station, the company will be capable of generating 376,500 kw of electricity, 174 per cent more than ten years ago.

Kansas Gas and Electric Company, Wichita, Kansas. During 1954, $19,971,719 was spent on the construction of new facilities. Of this sum, $10,803,412 was for additional generating facilities, including unit No. 2 at Murray Gill station with a capability of 77,000 kw and unit No. 3 at Neosho station with a capability of 73,500 kw. The company's total generating capability is now 369,500 kw or about 3½ times the capability at the end of World War II. The major item in the 1955 construction budget will be unit No. 3 at Murray Gill station, having a name-plate rating of 100,000 kw.

The Kansas Power and Light Company, Topeka, Kansas. Additional property and plant investments since 1945 have resulted in expenditures of $99,000,000 with nearly $12,000,000 expended during 1954. The tentative construction budget for 1955 has been set at $16,000,000. Included in the program is the installation of a new 33,000 kw turbogenerator at the Tecumseh generating station to replace equipment of 12,000 kw capability to be retired.

Kentucky Utilities Company, Lexington, Ky. During the year 1954, gross additions to and replacements of plants totaled $10,173,695. The company estimates that expenditures for 1955 will aggregate about $18,700,000. This estimate consists of about $7,948,000 to be expended in connection with the new E. W. Brown steam generating station; $3,735,000 for high-voltage transmission lines and associated terminals; and $7,017,000 for other additions to the company's operating system.

Louisiana Power & Light Company, New Orleans, La. Expansion and improvements in 1954 resulted in gross property additions of $18,181,316. Largest item had to do with work on the installation of unit No. 3 at Ninemile Point steam-electric generating station. This new unit with a capability of 135,000 kw is scheduled for completion in mid-1955. The company's construction program contemplates expenditures of approximately $16,800,000 in 1955.

Louisville Gas and Electric Company, Louisville, Ky. Approximately $18,541,000 was expended for utility plant during 1954 in order to increase and improve facilities. Long range planning includes further expansion. It is estimated that construction expenditures in 1955 will aggregate approximately $18,000,000.

Metropolitan Edison Company, Muhlenberg Twp., Berks County, Pa. Continuing expansion required the expenditure of $13,671,352 in 1954. Construction expenditures of more than $10,000,000 are forecast for 1955.

Michigan Gas and Electric Company, Three Rivers, Mich. A total of $991,800 was spent in 1954 with $810,000 being spent by electric departments. A record-breaking $1,250,000 expansion program is contemplated for 1955. Among the electric department projects planned is a new $90,000 substation at Three Rivers to receive energy directly from a high voltage transmission line of Indiana & Michigan Electric Company.

Minnesota Power & Light Company, Duluth, Minn. Total construction expenditures in 1954 were $4,329,700. Projects included were two new high voltage transmission lines in the Little Falls division, and the new 75 mile, 110,000 volt transmission line from Duluth to Silver Bay along the north shore of Lake Superior.

Mississippi Power Company, Gulfport, Miss. The construction budget for 1955 has been set at $5,525,000. A major item is the construction of a new 75,000 kw generating plant between Biloxi and Gulfport. Gross expenditures for electric construction in 1954 were $3,268,161.

(*Continued on page* 52)

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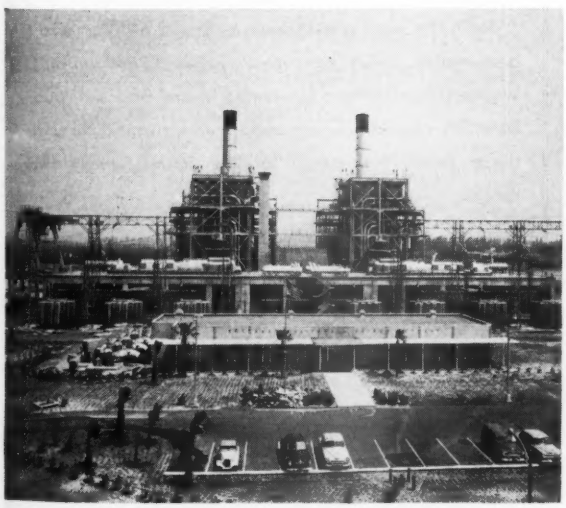

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Missouri Public Service Company, Warrensburg, Mo. The construction expenditures in 1954 for property additions amounted to $5,446,560. The major project completed during 1954 was the Ralph Green power plant at Pleasant Hill, Missouri, a 22,000 kw generating station designed for an ultimate capacity of 110,000 kw. The company's construction budget for 1955 totals $7,437,271.

Montana-Dakota Utilities Co., Minneapolis, Minn. During the past 5 years, the company completed a program of expansion and acquisition totaling more than $50,000,000. The 1955 construction budget totals $8,000,000, approximately $3,200,000 of which is earmarked for additions to gas and electric distribution systems. Electric transmission line additions and replacements will account for $2,300,000.

The Montana Power Company, Butte, Mont. Electric construction activities in 1954 were geared to the company's policy of staying ahead of the requirements of its customers. Construction of a third generating unit in the Kerr hydroelectric plant in western Montana was completed late in the year, increasing the generating capability of that development to 180,000 kw.

New England Electric System, Boston, Mass. The 1954 gross property additions totaled $44,600,000. A major expenditure in 1954 covered the work of constructing the new 150,000 kw Samuel C. Moore hydroelectric plant on the upper Connecticut river. This is scheduled for completion in mid-1956. Total construction expenditures in the postwar years (1946-1954) amounted to $288,000,000.

New England Gas and Electric Association, Cambridge, Mass. Net additions to the subsidiaries' property accounts in 1954 totaled over $5,700,000. The system's construction program for the years 1955 through 1958 contemplates expenditures by subsidiaries of approximately $22,300,000.

New Jersey Power & Light Company, Dover, N. J. In 1954, construction expenditures totaled $3,900,000. During the past year, the company's construction program included rebuilding the 115,000 volt substation at Glen Gardner to provide 20,000 kva of additional capacity, and rebuilding 15 pole-miles of 34,500 volt transmission lines. Looking to the future, the company acquired a new generating station site in Mercer county.

New York State Electric & Gas Corporation, Ithaca, N. Y. For the three years 1952 through 1954 new construction expenditures have amounted to $83,100,000. While no new electric generating facilities were placed in service during 1954, construction of the first 135,000 kw unit at the new Milliken station proceeded on schedule. Construction was also started on a 6,000 kw addition to the High Falls hydroelectric station. Both are scheduled to be completed this year. The construction program for 1955 amounts to $28,000,000 and additional expenditures for construction of $37,000,000 are estimated for the years 1956 and 1957.

Newport Electric Corporation, Newport, R. I. Construction work during the year consisted principally of routine additions and improvements necessary to serve new customers and provide for increased loads. Cash ex-

(*Continued on page* 54)

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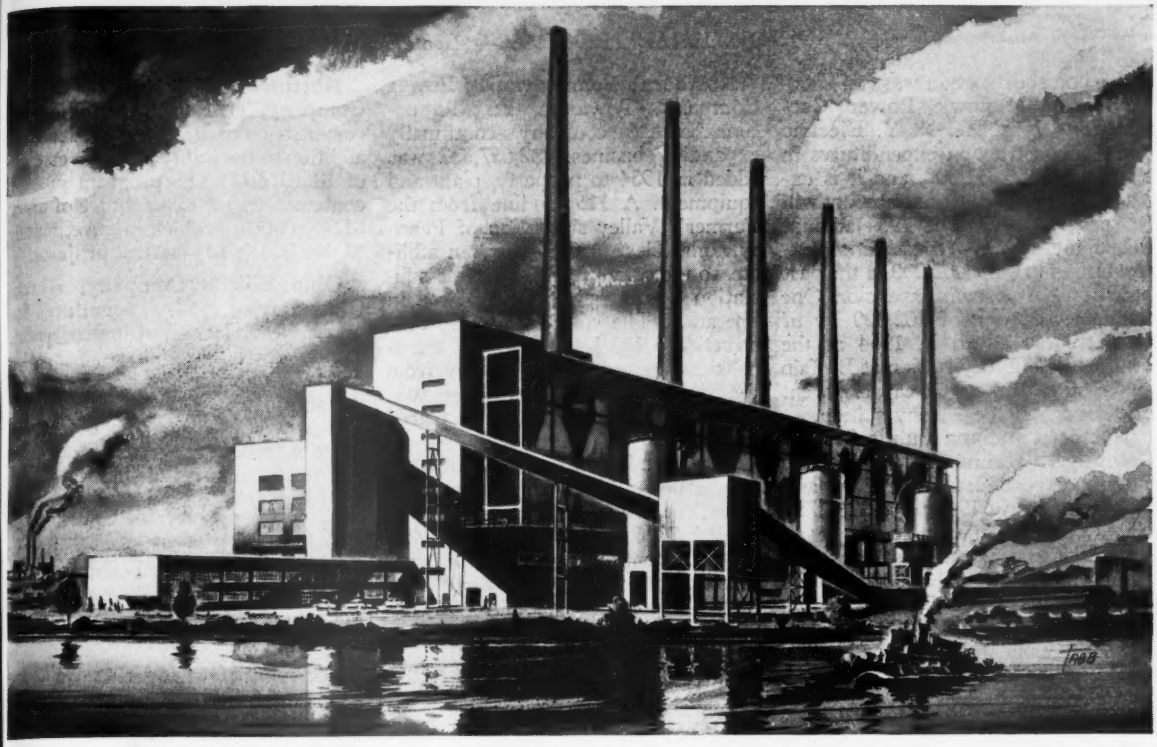

Architect's drawing of new River Rouge Power Plant

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pended on construction was $314,500.

Niagara Mohawk Power Corporation, Syracuse, N. Y. Electric and gas construction expenditures in 1954 were $60,511,000, and it is expected that about the same amount will be spent in 1955. The 1954 amount raised the system's construction expenditures to $410,402,000 in the past nine years of postwar expansion. One steam-electric unit of 102,000 kw of capacity was added in 1954 at the Charles R. Huntley station at Buffalo and another of the same capacity went into service at the Albany station.

Northern Indiana Public Service Company, Hammond, Ind. The amount expended for additions and improvements in 1954 were $21,275,000. Construction was begun on an electric generating station at Gary with an initial capacity of 130,000 kw. It is estimated that the 1955 construction program will cost $25,300,000. For 1956, the estimated cost is $28,700,000. The major construction project for 1955 and 1956 is the new Dean H. Mitchell station at Gary. The first unit of an ultimate six unit plant will add 130,000 kw to the company's electric generating capacity and is scheduled to be put in service late in 1956.

Northern Pennsylvania Power Company, Towanda, Pa. To accommodate the company's continually expanding business, $2,657,332 was added in 1954 to property, plant and equipment. A 115 kv line from the Farmer's Valley substation of Pennsylvania Electric Company, an affiliate, to the company's Sabinsville substation was completed and placed in operation. The company is also constructing a 115 kv "backbone" transmission line across its territory from the Sabinsville substation. A new substation at East Sayre was also placed in service.

Northern States Power Company, Minneapolis, Minn. In the past five years, construction expenditures have totaled $176,969,000 including $49,133,000 spent during 1954. Construction expenditures for 1955 and 1956 are estimated at $51,400,000 and $53,000,000 respectively. Of the 1954 construction expenditures, $19,018,000 was for electric production facilities, $23,832,000 for electric substation, transmission, distribution and other facilities. Major projects expected to be completed in 1955 include 100,000 kw steam electric generating unit No. 3 at Black Dog plant.

Northwestern Public Service Company, Huron, S. D. The 1954 construction program resulted in a net addition to the utility plant investment of $1,101,911. The program in 1955 contemplates the expenditure of about $1,900,000 of which approximately $1,400,000 is for electric projects.

Ohio Edison Company, Akron, Ohio. During 1954, expenditures for property additions and improvements amounted to $52,060,526 for Ohio Edison Company and $2,437,115 for its subsidiary, Pennsylvania Power Company. The company's new power plant at Niles, Ohio, was completed and put in service during 1954, adding 212,000 kw of capacity to the system. Two 135,000 kw units being added to the R. E. Burger plant are expected to be in service during 1955. A 90,000 kw unit is being added to the Edgewater plant and is scheduled for completion in 1957.

Oklahoma Gas and Electric Company, Oklahoma City, Okla. Expenditures for new construction during 1954 were $19,411,000, the largest for a single year in the company's history. A large part of this cost went

(*Continued on page* 56)

ADVANCE SHEETS
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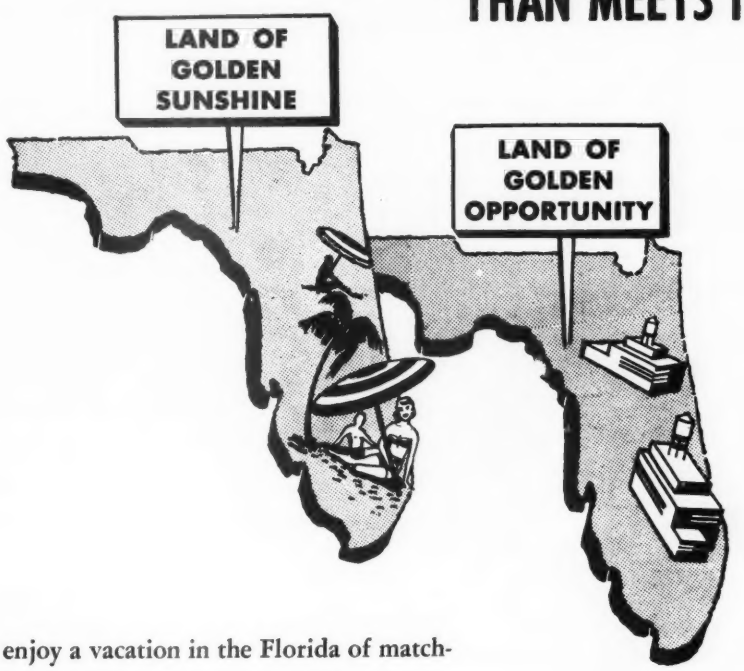

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FLORIDA POWER & LIGHT COMPANY

into the expansion of Mustang generating station. The expansion includes the installation of a third unit of 110,000 kw capacity. Construction expenditures for 1955 are estimated at $31,500,000. Approximately $17,000,000 of this will be expended on the completion of Mustang generating station and on the year's construction costs of the new Riverbank generating station.

Orange and Rockland Electric Company, Monroe, N. Y. Increased demand for electrical energy has caused the company to build a new substation of larger capacity at Florida and to increase the capacities of the present substations at Chester and Queensboro. As another part of its reinforcement program, the company is gradually converting its distribution system to 4800 volts and this work will continue in the future as speedily as schedule will permit.

Otter Tail Power Company, Fergus Falls, Minn. During the past 5 years, construction cost of new plants and transmission and distribution systems has amounted to over $20,000,000. For the year 1954, the total spent for new construction was $3,423,500.

Pacific Gas and Electric Company, San Francisco, Cal. Outlay for construction purposes in 1954 totaled approximately $171,000,000 which brings to $1,345,000,000 the amount spent by the company in the postwar period to keep pace with the rapid development of the area it serves. Major construction accomplishment of the year was the completion of the new Pittsburg steam plant, with a nominal rated capacity of 600,000 kw. This plant is the largest on the company's system and is said to be the largest steam plant west of the Mississippi river.

Pacific Power & Light Company, Portland, Ore. In 1954, the company's construction expenditures totaled $11,534,000 of which $4,594,000 was expended on the former Mountain States system. During the year the company increased substation capacity by 108,505 kva. The company estimates that expenditures for construction in 1955 will be approximately $12,500,000.

Pennsylvania Electric Company, Johnstown, Pa. Construction expenditures in 1954 amounted to $28,500,000. Since January 1, 1946, a total of $172,000,000 of new utility plant has been added. In 1954, Penelec completed the Shawville station. This 276,000 kw installation, built at a cost of $40,000,000, is said to be one of the three or four most efficient generating stations in the United States at present. Construction has been started on a 137,500 kw generating unit at Seward station.

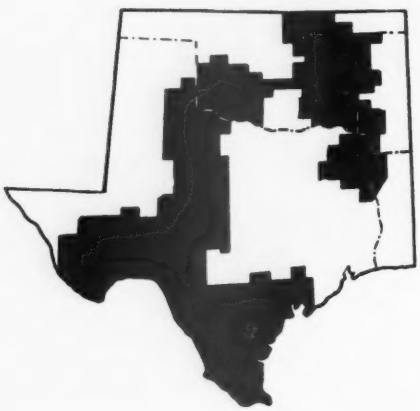
Pennsylvania Power Company, New Castle, Pa. Construction expenditures for the year 1954 amounted to $2,437,115. The program consisted principally of the following: 27 miles of new or reconstructed transmission lines; four new distribution substations totaling 9,450 kva of transformer capacity; change-over of 219 miles of distribution lines to higher voltage; and fifty-five miles of rural distribution lines.

Pennsylvania Power & Light Company, Allentown, Pa. Construction expenditures incurred by Pennsylvania Power & Light Company and its subsidiary, The Scranton Electric Company, during 1954 totaled $29,900,000. The first unit at the new Martins Creek plant and its transmission connections to the system were placed in commercial service. Construction of a second unit scheduled for service in 1956, was started in

(*Continued on page* 58)

More Power to . . .

THE GREAT SOUTH WEST



The Central and South West System, in 1955 and 1956, will increase its generating capability by 443,000 kilowatts, or 36%, in order to meet the increasing demands of this growing country.

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The Montana Power Company

1954. The planned construction for 1955 totals $32,600,000. The 1954 expenditures brought the total for the postwar electric construction program to $276,000,000.

Philadelphia Electric Company, Philadelphia, Pa. Since 1945, new construction has amounted to $453,000,000 with expenditures during 1954 totaling $66,561,806. A major item in 1954 was the completion of the first turbine-generator of 150,000 kw capacity at Cromby station. The second unit of 200,000 kw capacity is scheduled for operation about mid-1955. Expenditures planned for the five-year period 1955-1959 are estimated to exceed $300,000,000.

Portland General Electric Company, Portland, Ore. During the year PGE spent more than $10,900,000 in new construction, making a total expenditure of approximately $69,000,000 since 1945. A major item in 1954 was $2,660,000 for development of the Timothy Meadows reservoir above the company's Oak Grove hydroelectric plant on the Clackamas river. Completion of this project in the fall of 1955 will have the effect of adding an average 10,500 kw to PGE's three Clackamas river plants during the fall and winter months. It is expected that the construction program for 1955 will amount to $10,000,000.

Potomac Electric Power Company, Washington, D. C. Construction expenditures have continued at high levels. They have aggregated $156,671,000 during the past ten years, of which $23,896,000 was expended during 1954. It is anticipated that approximately $26,000,000 will be expended in each of the years 1955 and 1956.

Public Service Company of Colorado, Denver, Col. Construction expenditures in 1954 of $24,603,000 exceeded those of any previous year. At the end of 1954 authorized future construction totaled $53,230,000, of which $25,200,000 is scheduled for expenditure in 1955. Initial construction will be started in 1955 on the new Cherokee generating station. The initial unit will have a capacity of 100,000 kw and is expected to be completed the latter part of 1957.

Public Service Company of New Hampshire, Manchester, N. H. Growing demand for electric service and the constant program of modernization resulted in gross expenditures in 1954 of $10,650,078. The largest single project carried on during the year started in 1953 and will be finished by the summer of 1955. It contemplates the installation of a second unit at Schiller station. This unit will have a 40,000 kw name-plate rating and will have a capability of 50,000 kw. To provide for the needs of early 1957, commitments have been made for the installation of another unit at Schiller station.

Public Service Company of New Mexico, Albuquerque, N. M. During 1954, the company expended approximately $6,500,000 for new construction. Of this sum, $3,452,000 was expended for completion of the 3rd unit at Person station which is rated at 33,000 kw and has a net capability of 38,000 kw. Present estimates indicate that 1955 expenditures for construction will total approximately $2,500,000.

Public Service Company of Oklahoma, Tulsa, Okla. Expenditures of over $18,400,000 for additional facilities were made in 1954. In 10 years, since 1944, electric plant additions have amounted to $99,000,000 which represents 73 per cent of the company's electric property at the close of 1954. It is estimated that during the years 1955 and 1956 the company's construction program will approximate $52,500,000.

Public Service Electric and Gas Company, Newark, N. J. Expenditures for electric and gas plant additions and improvements in 1954 were $88,677,757, the largest amount in any one year in the company's history. The company's construction program as of December 31, 1954, amounted to approximately $200,000,000. It is estimated that about $90,000,000 will be expended in 1955 and the balance in subsequent years. A substantial part of the cost of the present program is applicable to the new Linden generating station. This station will have two turbine-generator units of 225,000 kw capacity each. The unique feature of this project will be the supplying of large quantities of process steam from extraction stages of the turbines to Esso Standard Oil Company in exchange for fuel, oil and water.

Puget Sound Power & Light Company, Seattle, Wash. Construction expenditures for 1954 amounted to $6,746,310. It is presently indicated that cash requirements for new construction for the period 1955-59 will be in the neighborhood of $75,000,000. It is expected that expansion and betterments of distribution and transmission facilities will alone require the expenditure of around $7,000,000 in 1955.

Rochester Gas and Electric Corporation, Rochester, N. Y. Construction expenditures in 1954 were $13,532,210 with additions to electric plant amounting to $6,304,893. In the past eight years, additions to the company's plants have aggregated $103,649,663. The company's forecast for 1955 construction provides for the spending of approximately $17,000,000. Electric department additions and improvements are anticipated to cost in excess of $9,200,000. Included is the initial work on the fourth steam electric generating unit at Russell station.

St. Joseph Light & Power Company, St. Joseph, Mo. During 1954 expenditures for new construction were $1,071,500. The 1955 construction expenditures are expected to exceed $2,000,000 and will include a new 200,000 lb. per hr. steam boiler designed for 450 lb. pressure and 750° F. temperature for the Edmond street plant. This will increase electrical generating capability of the plant by 3,000 kw.

San Diego Gas & Electric Company, San Diego, Cal. Gross capital expenditures in 1954 totaled $29,492,600, as compared with $18,797,794 in 1953. An investment of $25,632,600 was made in electric department facilities. The largest single expenditure in the electric department was $13,121,000 for the completion of turbo-generating unit No. 1 at the new Encina steam-electric station. Expansion during 1955 will require expenditures totaling about $19,176,500. A total of $13,865,000, more than 70 per cent of the 1955 construction budget, is allotted to the electric department.

Sierra Pacific Power Company, Reno, Nev. During 1954, a total of $2,774,700 was spent to meet demands for electricity, gas and water. Plans for 1955 call for an expenditure of $3,054,000.

Southern California Edison Company, Los Angeles, Cal. Average annual expenditure for the last six-year period, 1949-1954, was $68,819,000. The fifth unit at Redondo was completed in 1954 at a cost of approximately $26,500,000. It is the first 160,000 kw unit of a new steam plant which is a part of the Redondo steam station. The new plant is designed to permit the inclusion of one additional unit of comparable size. Plant construction expenditures for 1955 total $76,087,000.

Southern Colorado Power Company, Pueblo, Colo. A substantial

(*Continued on page* 60)

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increase in construction expenditures is reported by the company with $2,993,351 being spent on new construction in 1954, compared with $725,818 in 1953. Construction for the installation of an additional generating unit of 16,500 kw at the Canon City plant is under way.

The Southern Company, Wilmington, Del. Expenditures for new generating, transmission and distribution facilities in 1954 amounted to $71,000,000 and have been budgeted at $78,000,000 for 1955. The system companies plan to invest more than $240,000,000 in new facilities in 1955, 1956 and 1957.

Southern Indiana Gas and Electric Company, Evansville, Ind. Expenditures totaling $10,867,069 were made in 1954, the greatest for any one year in the company's history. Estimated expenditures for additions and improvements in 1955 are approximately $5,000,000.

Southwestern Gas and Electric Company, Shreveport, La. The year 1954 completed nine consecutive years during which substantial annual outlays for additions and improvements to plant have been required. In this period such expenditures aggregated $80,100,000, an amount equivalent to 775 per cent of gross plant investment at the 1954 year-end. No abatement of this program is presently in view.

Southwestern Public Service Company, Amarillo, Texas. More than $21,358,000 was expended for new facilities during 1954. Installation of a third generating unit at the Moore county plant, with a capability of 52,500 kw was completed thus increasing the capability of that plant to 81,100 kw. An expenditure of $15,902,000 has been budgeted for construction of new facilities in 1955 including the installation of a total of 165,000 kw of additional capability in the Denver City plant and in plant X.

(*Continued on page* 62)

This announcement is not an offer to sell or a solicitation of an offer to buy these securities. The offering is made only by the Prospectus.

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May 25, 1955

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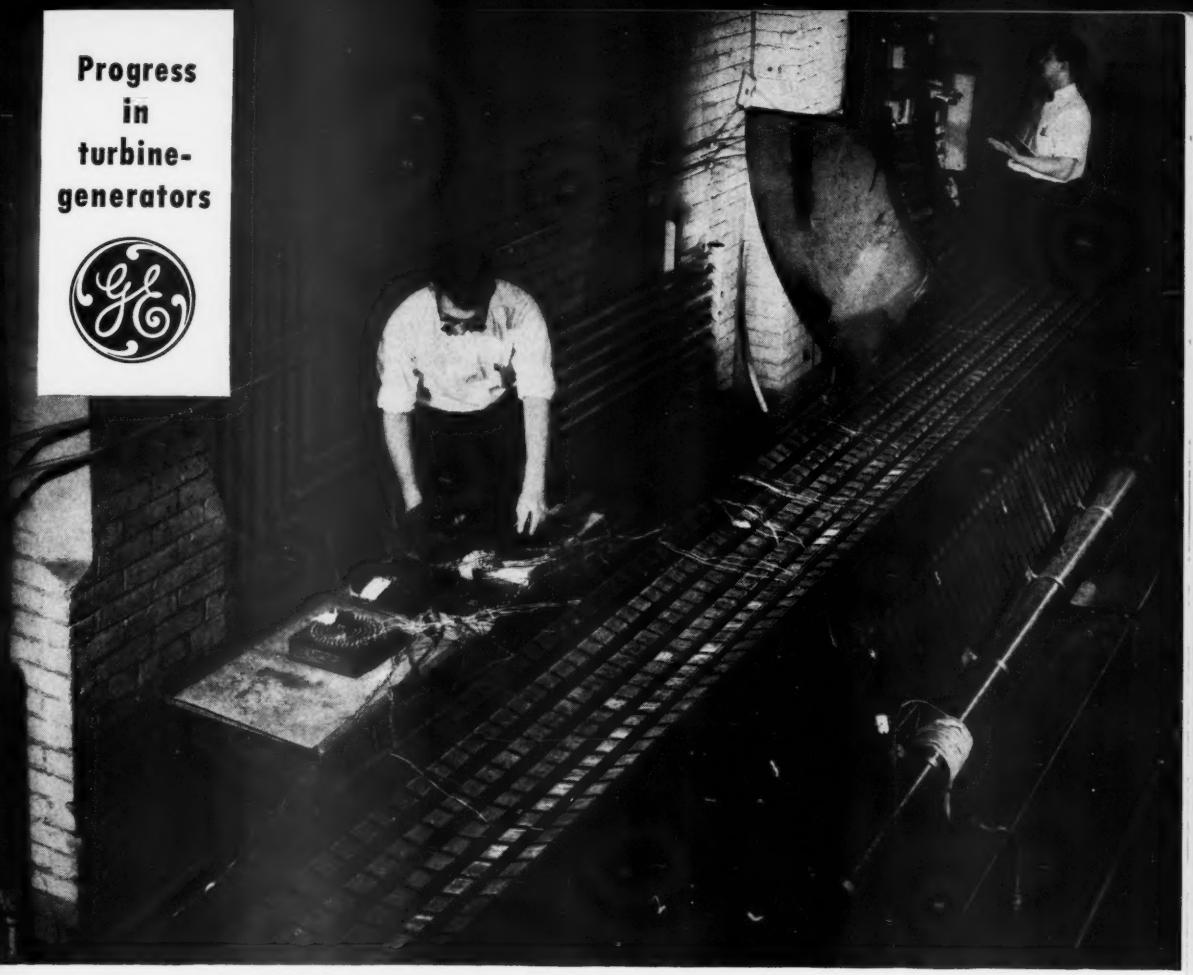
Progress in turbine-generators



HOW MUCH CAN GENERATOR INSULATION TAKE?

G-E engineers compress 10 years of operating cycles into 4 months to evaluate new turbine-generator materials

The on-off operation of a turbine-generator during daily load cycles creates this problem: Wide temperature variations make the copper stator coils expand and contract relative to the steel core. This causes complex movements which the insulation system must be designed to withstand.

For several years, engineers in the General Electric Materials and Processes Laboratory have been using the special 17½-foot-long core section pictured above to find out just how well various generator designs can stand up to hot-cold cycling. High currents are run through full-size stator conductors to build up heat, then cut off while the apparatus is cooled by blowers. Repeating this procedure many times, it is possible to duplicate, in four months of testing, the anticipated number of operating cycles during ten years of service.

This important test provides an accurate means of evaluating both present insulation materials and new ones under development. It is typical of the applied research which is always under way at General Electric to improve tomorrow's turbine-generators.

For more complete information on many aspects of G-E turbine progress, write for bulletin GER-1074, "Research and Development in the Field of Turbine-Generator Prime Movers." Address Section 254-23, General Electric Company, Schenectady 5, N. Y.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Tampa Electric Company, Tampa, Fla. Plant expansions totaling over $10,000,000 were made in 1954. It is expected that the 1955 program will approximately be $8,250,000.

Texas Electric Service Company, Fort Worth, Texas. Construction of additional generating, transmission and distribution facilities continued at a high level during 1954. With the completion of two new generating units, the company now has a total net generating capability of 683,255 kw, or more than five times the total capability in 1947. Plans have been made to start construction in 1955 on a new 175,000 kw unit at the Eagle Mountain station in Fort Worth.

Texas Power & Light Company, Dallas, Texas. Total construction expenditures for the year were $28,233,506, bringing to $92,819,406 the amount spent by the company for new facilities during the last five years. Plans for 1955 call for construction expenditures totaling $16,526,000. The River Crest steam electric station was completed and placed in service and construction of the Collin steam electric station continued in a satisfactory manner.

Texas Utilities Company, Dallas, Texas. The three system electric companies spent $68,325,000 on new plants and equipment in 1954. The cost of property to be built in 1955 is estimated at more than $56,700,000. The 1954 additions included completion of four major generating units capable of producing 370,000 kw.

The Toledo Edison Company, Toledo, Ohio. The company's construction program has been going forward on schedule. During 1954, $19,700,000 was spent for construction. Of this amount approximately $11,600,000 represents expenditures on the new Bay Shore steam generating station and the necessary transmission lines and other facilities to deliver its power to various points on the system. The 1955 construction program will amount to $23,500,000.

The Tucson Gas, Electric Light and Power Company, Tucson, Ariz. Net additions of $3,905,337 were made to electric property in 1954. Of this amount, $1,423,350 covered the completion of unit No. 4, with a capability of 54,000 kw, at the DeMoss-Petrie generating station.

Union Electric Company of Missouri, St. Louis, Mo. Construction expenditures by Union Electric and subsidiaries totaled $28,165,000 in 1954. Expenditures totaling $232,000,000 have been budgeted for the five years 1955-1959. These budgeted expenditures include approximately $35,000,000 for a third generating unit at the Meramec plant. It is expected that this unit will have a capacity of 200,000 to 250,000 kw and will go on the line in 1958.

Utah Power & Light Company, Salt Lake City, Utah. Construction expenditures for new electric facilities by Utah Power & Light Company and subsidiary, The Western Colorado Power Company, reached an all-time high of over $24,500,000 during 1954. Since the end of World War II, new electric facilities have been installed at a total cost of almost $110,000,000. The largest expenditures were for continuing the installation of the 100,000 kw third section of the Gadsby plant and the completion of the 66,000 kw Carbon plant.

Virginia Electric and Power Company, Richmond, Va. Additions to property amounted to $63,864,000 in 1954, the largest amount ever added in any one year. Additions to electric property accounted for $60,205,000—94 per cent of the total. During that year, $34,215,000 was spent on new generating facilities with $16,906,000 being spent on the new 100,000 kw hydro development at Roanoke Rapids. A second 90,000 kw unit which recently began operation in the new Portsmouth station required an expenditure of $8,452,000. Work on a third unit to add 100,000 kw of generating capacity at the Possum Point station called for $8,491,000. It is estimated that the 1955 construction budget will require the expenditure of $53,000,000.

The Washington Water Power Company, Spokane, Wash. Expenditures for construction totaled nearly $6,000,000 in 1954, bringing to $83,000,000 the investment in this category since the end of World War II. Listed with the major projects of the year was the building of transmission lines for the purpose of further strengthening the system. The 1955 budget requires the investment of another $10,000,000.

The West Penn Electric Company, New York, N. Y. Expenditures in 1954 by subsidiary companies (Monongahela Power Company, The Potomac Edison Company and West Penn Power Company) amounted to $36,300,000, nearly 40 per cent of which represented completion of two new 140,000 kw generating units. With the addition of these units, it is believed that generating facilities will be sufficient to handle load growth through the year 1956. One of the units was placed in operation at the Springdale station of West Penn Power Company. The other unit was placed in service at the Albright station of Monongahela Power Company. Gross additions in 1955 to the electric properties will cost approximately $23,000,000.

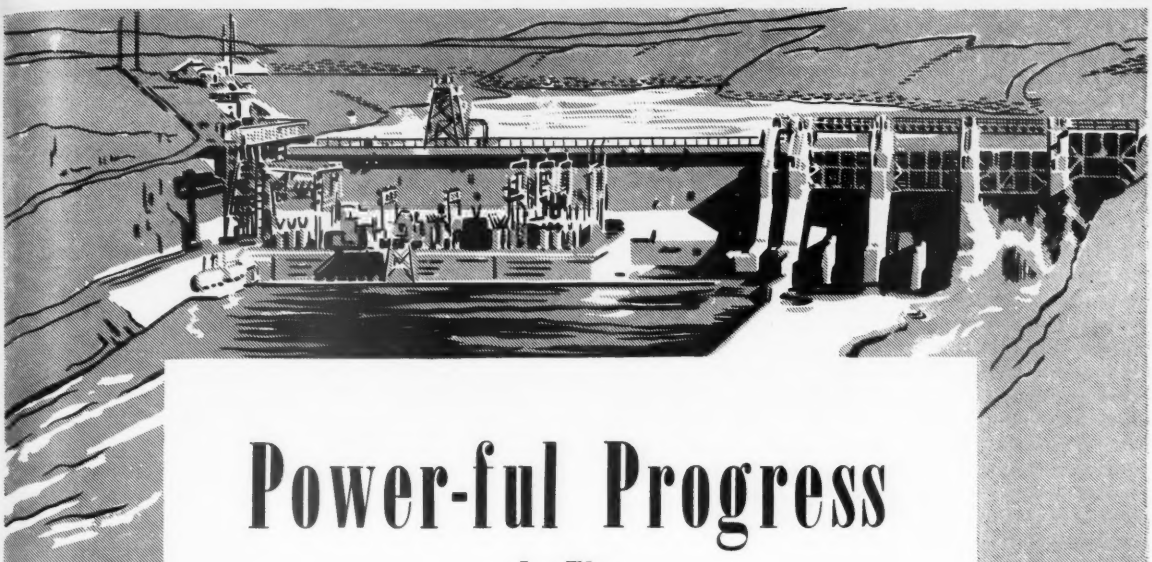
West Penn Power Company, Pittsburgh, Pa. Gross electric property additions during 1954 were approximately $18,150,000. These included the completion of the company's largest turbogenerator (140,000 kw) at the Springdale power station. Planned additions for 1955 are estimated at $13,000,000.

Western Light & Telephone Company, Inc., Kansas City, Mo. The construction program for the year 1954 represented an expenditure of $2,235,000. The construction budget for 1955 amounts to $4,900,000 of which $2,730,000 is for the installation of an additional generating unit of 16,500 kw capacity at the Arthur Mullergren station at Great Bend.

Western Massachusetts Companies, Greenfield, Mass. Total construction outlays for 1954 were $4,139,059. Planning for a third generating unit at West Springfield steam plant of 100,000 kw is in the active stage and completion has been set for the summer of 1957. The proposed addition will double the generating capacity of that station.

Wisconsin Electric Power Company, Milwaukee, Wis. Expenditures for electric property amounted to approximately $32,000,000 during 1954. The major accomplishment of the construction year was made at Oak Creek where the second 120,000 kw generating unit at the company's newest and most modern power plant was placed in service. Work is proceeding on a third unit which is expected to be in operation sometime next winter.

Wisconsin Power and Light Company, Madison, Wis. In 1954, a total of $17,800,000 was spent for construction. Of this amount $8,400,000 was invested in additions and improvements to the electric system—the largest in any single year in the history of the company. The second unit 75,000 kw unit at the Rock river steam electric generating station was the major project under construction during the year. It is estimated that the total cost of this second unit when completed will be $10,300,000. Expansion plans for 1955 include completion of the second unit at Rock river.



Power-ful Progress
In The
Snake River Valley

THE economy of the Snake river valley of southern Idaho and eastern Oregon continues to expand at a remarkable pace as a result of irrigated agricultural expansion, industrial development, food processing and increasing activity in mining and processing of phosphate, cobalt and other minerals.

Electrical growth in the territory served by Idaho Power Company has progressed more rapidly than in any other area in the Northwest during the past 10 years, and there is every indication it will continue to do so.

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Capital Funds over $125,000,000 *Total Assets over* $1,400,000,000

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MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

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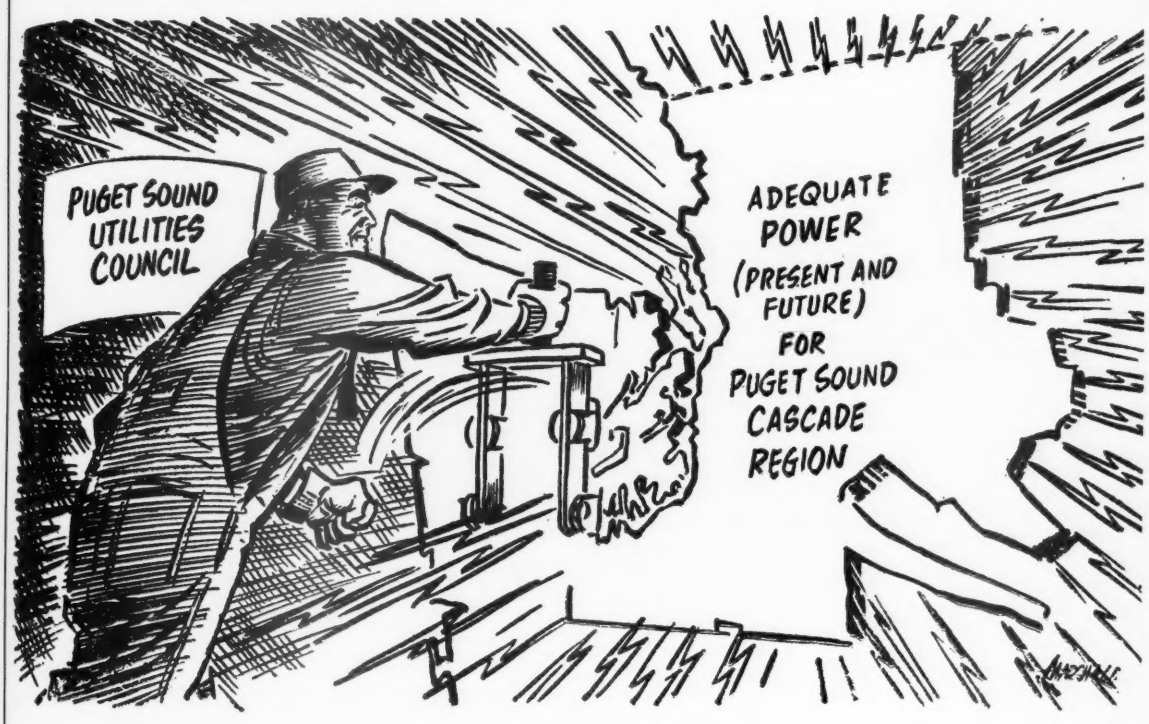


A Blueprint For Power

ONE YEAR ago The Post-Intelligencer hailed the formation of the Puget Sound Utilities Council editorially, and predicted that it would become a power utilities pattern for the nation.

And long before that The P-I editorially refused to believe that so-called "private" power must be entirely dissolved in order for so-called "public" power to operate at the peak efficiencies the future obviously requires.

So, a year ago, we were naturally pleased when the announcement came that Seattle City Light, Tacoma City Light, Puget Sound Power and Light, Snohomish County Public Utility District and Chelan County Public Utility District had joined to form the Puget Sound Utilities Council.

At that time, however, the new Council had no program in the engineering sense. But it did have a joint willingness to create such a program.

Yesterday that program was published. Dr. Paul J. Raver, superintendent of Seattle City Light and chairman of the Council, has termed it of national importance and **"one of the greatest forward steps in regional development ever to occur in the Pacific Northwest."**

Frank McLaughlin, president of Puget Sound Power and Light, feels that it **"is destined to make major contributions to the growth and development of the area."**

THE report by engineer Jack D. Stevens and his staff contemplates expenditure of 670 million dollars or more to be invested in new power facilities, and is a blueprint to assure adequate present and future power in the area embraced.

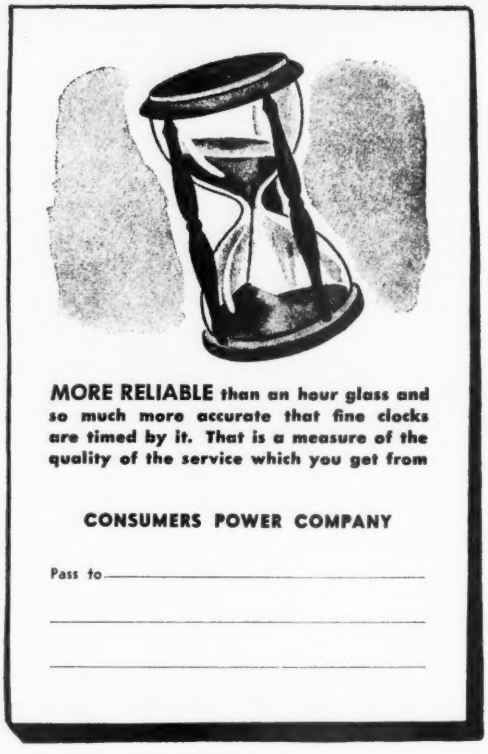
It is also a blueprint to end power shortages, brownouts, and bickering. It may well be the beginning of the end of the outmoded concept that utilities must be all "private" or all "public" and never the twain must meet.

The above illustration and text are reprinted from an editorial appearing in the Seattle Post-Intelligencer on April 25, 1955.

PUGET SOUND POWER & LIGHT CO.

YOUR Special Advantage for JUNE!

. . . . this is the SPECIAL ADVANTAGE STICKER which dozens of companies are using this month on the front cover of Electrified Industry. →


MORE RELIABLE than an hour glass and so much more accurate that fine clocks are timed by it. That is a measure of the quality of the service which you get from
CONSUMERS POWER COMPANY
Pass to

THE SPECIAL ADVANTAGES of electric service include: . . Convenience . . . Flexibility . . Instant Starts . . . Economy . . . Reliability . . Cleanliness . . . Good Regulation . . . Ability to take Overloads . . . and the Cooperation and Advice on Electrical Problems which most power companies offer.

Customers are reminded of you and of the SPECIAL ADVANTAGES of being on your lines. In addition your stickers help them route your messages to additional readers.

Some companies make up stickers which carry their own slogan (a good idea). Others have Reddy Kilowatt remind the readers that electric power is their willing servant.

Power salesmen make friends for your companies and add to your "net divisable." Years ago they decided that they needed help to overcome the effects of the competitive power, diesel-and-steam, agin-the-utilities magazines that they saw on their customers desks. They helped create the picture magazine which tells the true story that electricity, properly used, is worth many times its cost.

They use this magazine to make 21¢ calls for them in between the $5 and $10 calls they make in person.

By using Electrified Industry they are able to maintain better-than-ever customer contact and increase the net revenue of the utilities.

ELECTRIFIED INDUSTRY and ***Today's Business***

Martin Publications—20 No. Wacker Dr., Chicago 6

XUM

We are sure you will enjoy a productive, interesting and pleasant Convention in the Great City of Los Angeles.

When you return home mark June 3 to 6, 1956 on your calendar when we hope to greet you again in Atlantic City.

ATLANTIC CITY THE SOUTHERN NEW JERSEY SYSTEM **ELECTRIC COMPANY**

Underwriters of

Public Utility Bonds,
Preferred and Common Stocks

Securities of

Industrial Corporations

LEHMAN BROTHERS

New York Los Angeles Chicago

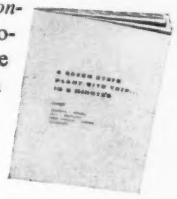
The "small town" system that gives "big town" service

—in Michigan, Indiana, Ohio, Kentucky, West Virginia, Virginia, Tennessee

The American Gas and Electric System has frequently been called a "small town" system with a reputation for "big town" service. Few of the 2319 communities it serves exceed a population of 25,000. Yet, these towns make up a 7-state area that today is growing and thriving—an area that has all of the elements—natural and human resources for even greater future growth and development.

The American Gas and Electric System today is the largest privately owned producer of power in the nation. System facilities include the most modern and efficient generating plants in the world. "Economy from point of generation to point of use" is basic American Gas and Electric Company policy.

In seeking a new plant site, don't overlook the advantages of dependable low-cost power. Our Area Development Department can be of real help to you. Phone or write, *in confidence*, for our brochure "A 7-State Plant Site Trip in 5 Minutes."



AMERICAN GAS AND ELECTRIC COMPANY

30 CHURCH STREET, NEW YORK 8, N.Y.

OPERATING AFFILIATES:

Appalachian Electric Power Company • Indiana & Michigan Electric Company
Kentucky Power Company • Kingsport Utilities, Inc. • Ohio Power Company
Wheeling Electric Company

Super power transformers pace utility expansion

New Era in Power Transmission

THIS 230,000-volt, 150,000-kva power transformer was built by Allis-Chalmers for Duke Power, to be installed at Riverbend steam station near Mt. Holly, North Carolina. It is believed to be the highest kva transformer ever put into service in the 230,000-volt class.

Records are being broken almost monthly as larger and larger power transformers are shipped by Allis-Chalmers to utility installations all over the country. For example, the highest voltage transformers ever ordered in the United States are now being built by Allis-Chalmers. These will be 345,000-volt, 200,000-kva single-phase units that will form the largest bank ever built — a total of 600,000 kva. They will be shipped at the end of this year.

Allis-Chalmers is becoming the overwhelming choice to help utilities break the barriers of high voltage transmission with larger and larger transformers. Here are some of the reasons why:

Allis-Chalmers pioneered the development of corona-free design. Result: Possibility of insulation damage that previously made such large transformers difficult to design is completely eliminated. Buyers are assured maximum transformer life with no danger that corona will cause insulation breakdown.

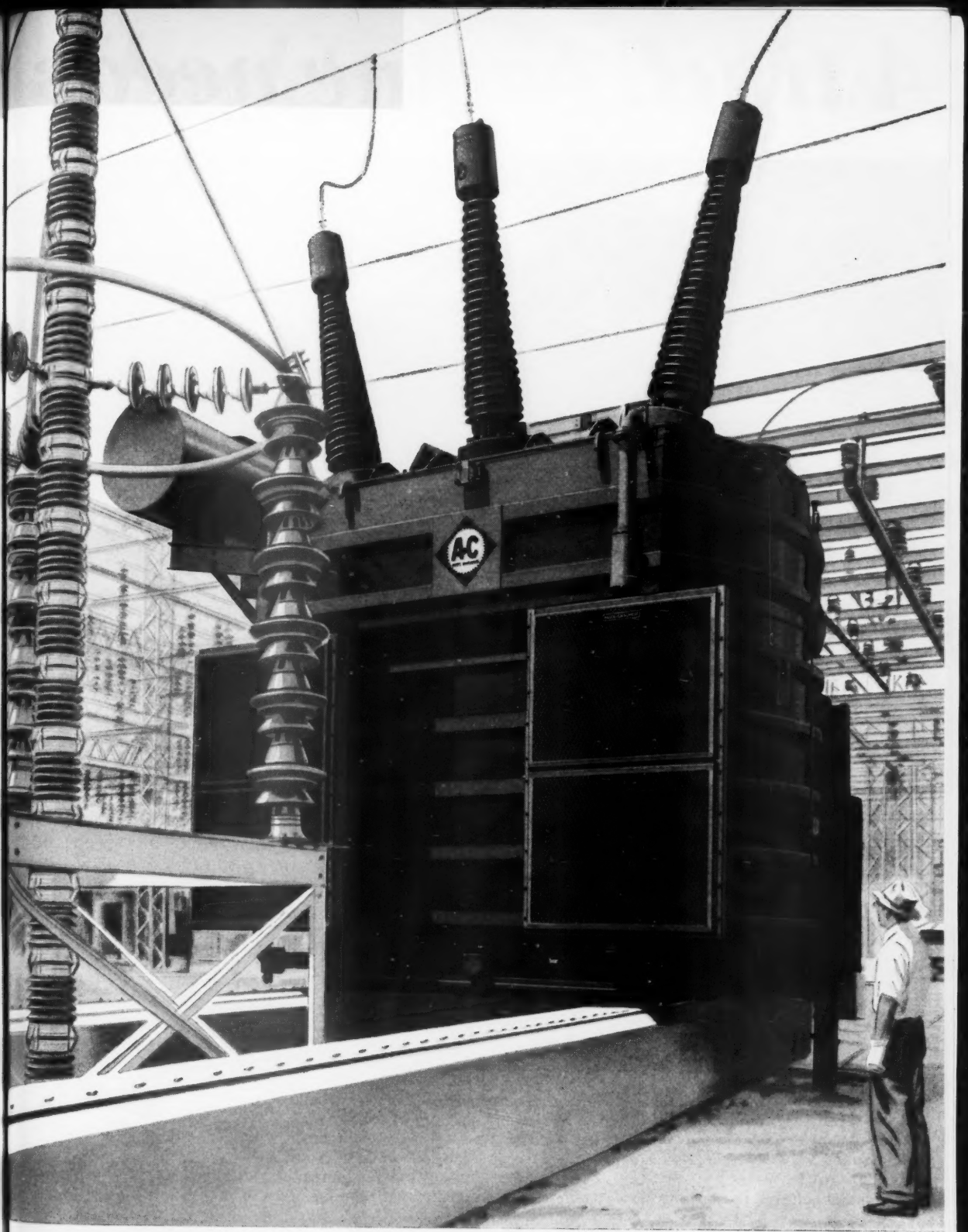
Allis-Chalmers last year successfully produced the highest voltage commercial-type transformer ever built. The 600,000-volt unit gives utilities a proved means for lifting voltage horizons even farther. It produced data which show the practicality of designs for power transformers for 880,000-volt transmission.

Allis-Chalmers successfully adapted welding techniques to make possible the use of heavy plate aluminum in transformer core and coil construction. As a result, transformers are lighter in weight, can be built in larger sizes, and can be more easily shipped and installed.

An Allis-Chalmers representative will be glad to discuss transformer developments with you at your convenience. Call the nearby A-C office or write Allis-Chalmers, Milwaukee 1, Wis.

A-4573A

ALLIS-



CHALMERS

A truck engine needs

From fiery forges and precision machines come extra-strong engine crankshafts, built to make the big difference in truck life.

INTERNATIONAL crankshafts are designed and built for truck use. They are heavier than comparable forged or cast alloy designs, but without any "lazy metal." Those used in light-duty models are 17% heavier than the average weight of 6-cylinder crankshafts used in the four other leading light-duty makes—for maximum strength and rigidity, long life.

INTERNATIONAL® TRUCKS

International Harvester Builds McCORMICK® Farm Equipment and FARMALL® Tractors ... Motor Trucks ... Industrial Power ... Refrigerators and Freezers

Top TV comedy! Ronald Colman and Benita Hume in "The Halls of Ivy," CBS-TV. See your paper for date, time and channel.

a "backbone" like this—

to save you the BIG money

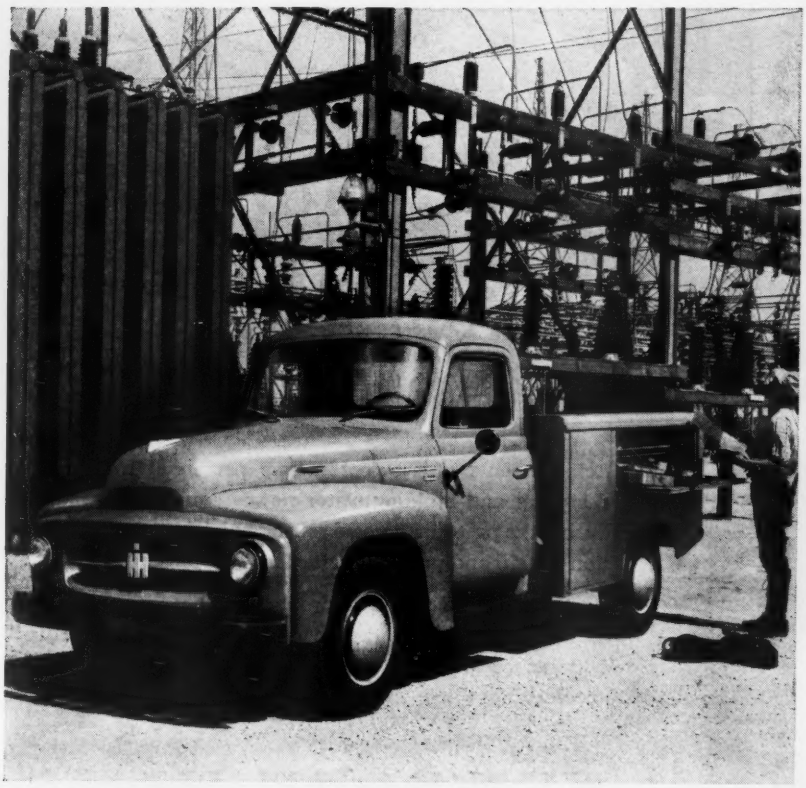
Crankshafts are just one example of INTERNATIONAL all-truck engineering that saves you the *big money*.

Of the five leading makes, only INTERNATIONAL offers a complete line that is *all-truck built* . . . with no automobile engines or components asked to do a truck job.

You save the most with an INTERNATIONAL that's *all-truck built* to last longer. It earns its keep in lower over-the-years operating and maintenance cost. It pays for itself in use. It saves you—earns you—the *big money*.

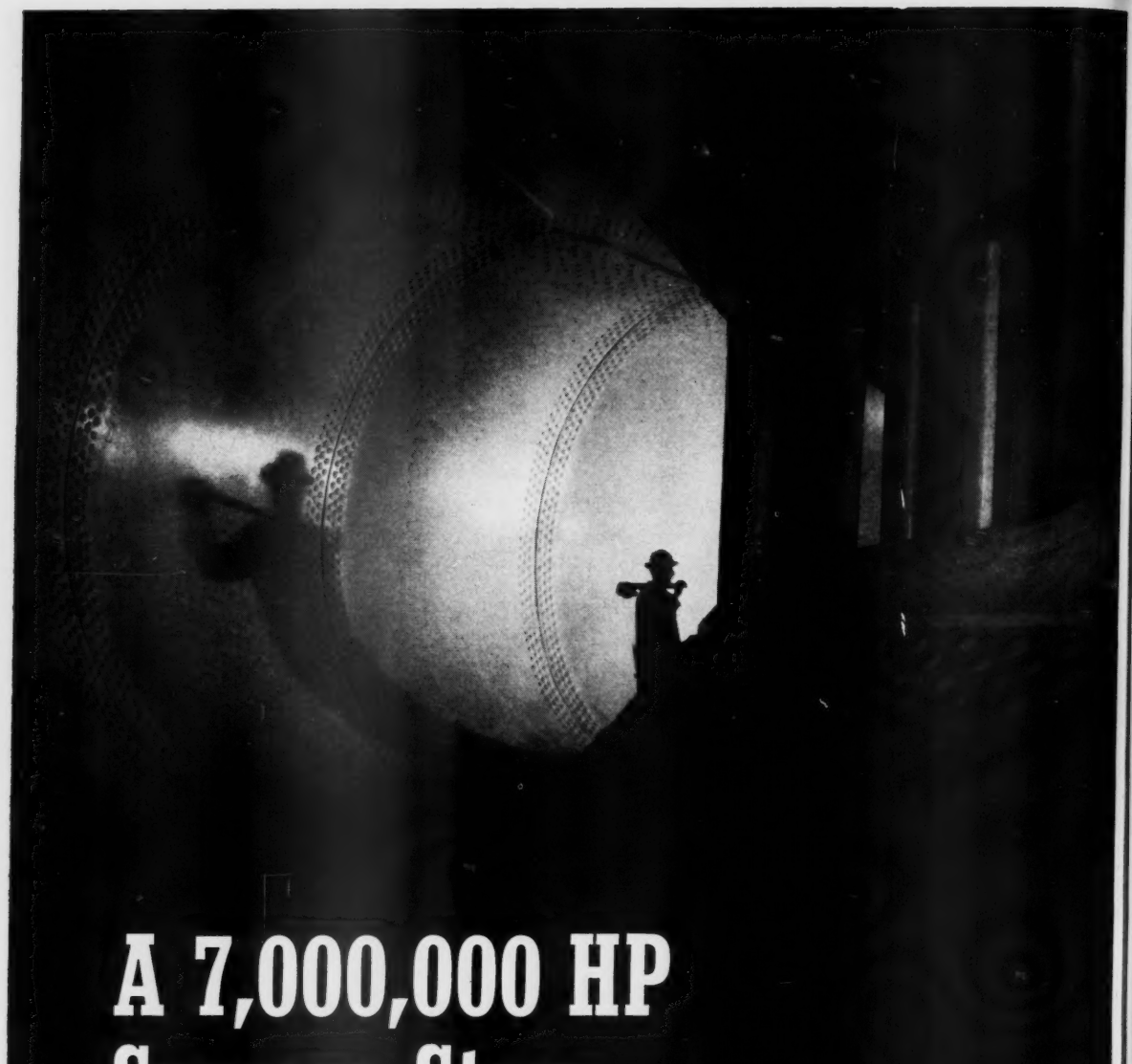
Keeping costs down has made INTERNATIONAL the heavy-duty leader for 23 straight years. Let your INTERNATIONAL Dealer or Branch show you the right INTERNATIONAL for your job—built to save you the *BIG* money.

INTERNATIONAL HARVESTER COMPANY • CHICAGO



There's an INTERNATIONAL *exactly right* for every public utility job—*all-truck built to save you the BIG money.* 9 light-duty models with Service-Utility body and 11 medium-duty chassis from 4,200-16,000 lbs. GVW. Every other truck type. World's widest choice of power and power transmission options.

All-Truck Built to save you the BIG money!



A 7,000,000 HP Success Story

Interior view of spiral casing at Norris Dam

Achievements of Newport News personnel in designing and building water power equipment during the past thirty years reflect a high integration of skill and production facilities.

Answering demands for hydraulic turbines rated as high as 165,000 horsepower and as low as 500 horsepower, this trained organization has successfully filled contracts with an aggregate rated output in excess of 7,000,000 horsepower.

Other essential equipment including penstocks, spiral casings, valves, pumps, gates and rack rakes are also designed and built by Newport News.

An illustrated copy of our booklet entitled, "WATER POWER EQUIPMENT," will be sent to you upon request.

NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY
Newport News, Virginia

"Vision is Indispensable to Progress"

Invisible horsepower that leaps to light a city...

When Thomas Edison died, it was suggested that all electric power be switched off for 60 seconds in tribute. The idea was abandoned when it was realized that even such a short interruption might be dangerous...

The continuous flow of electricity was too vital to our national life!

Yet, despite immense progress to date, privately-owned electric utility companies and equipment manufacturers are working to find new uses for electricity and provide steadily better service.

The uses of electricity by industry are many and varied—dielectric heating to bond wood and plastics... electronic units for smoke control... motors for power and refrigeration. Power generation through nuclear energy is the newest of these miraculous developments.

At home, electrical energy lightens housework and houses are heated in winter and cooled in summer by "heat pumps" which use the earth or air, both as a source of heat and dissipation of heat during the cooling cycle. Soon you may be cooking your food electronically in one-tenth the time it now takes.

Now with a powerful new X-ray tube, doctors can film super-speed movies of the blood in circulation—an advancement that opens vast new fields in heart disease research.

America's insatiable thirst for electric power is being met with a huge construction program for which $2,800,000,000 is budgeted for 1955. The next ten years should see the amount of electric energy almost doubled.

The impressive record written by the suppliers of electrical energy and equipment shows once again what can be accomplished by productive labor, capable management and thousands of individual investors under a competitive business system that is free.

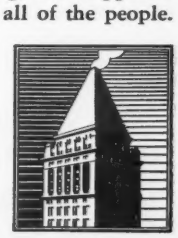
For *freedom* is the foundation of America's strength and of her future. It is the assurance of greater happiness and abundance for all of the people.

PUBLIC UTILITIES GROUP

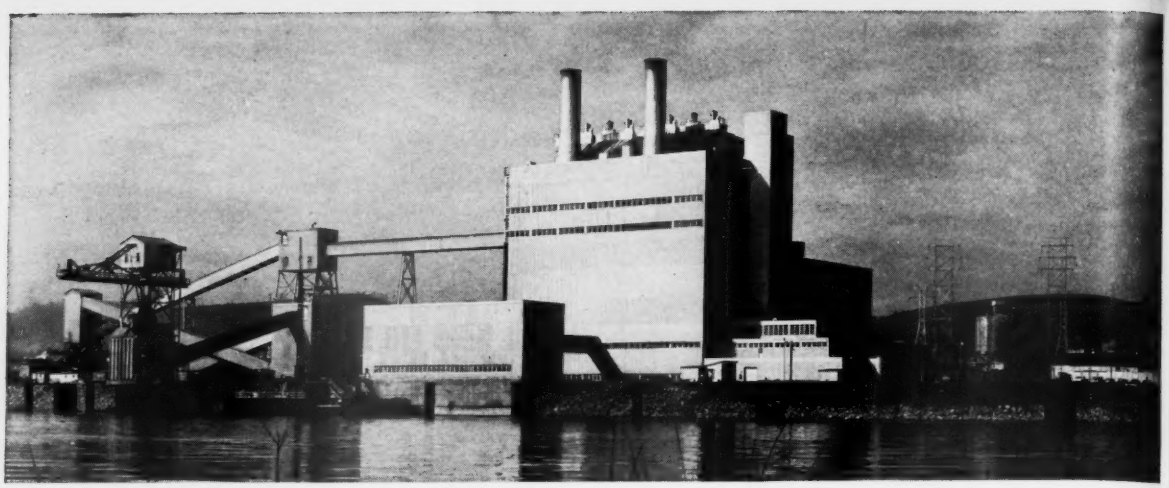
BANKERS TRUST COMPANY

16 WALL STREET, NEW YORK, N. Y.

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

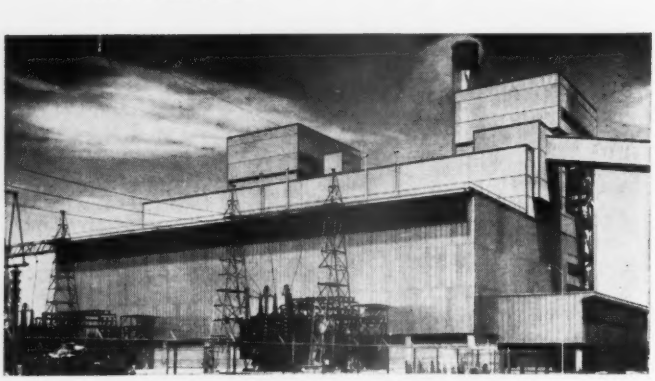


This advertisement was published in national magazines as a tribute to the Public Utilities Industry.



Why fine new power plants everywhere have Q-Panel Walls

Builders of new power plants in all parts of the country have specified Q-Panel walls for the following very good reasons: 1. Q-Panels are permanent, dry and noncombustible, yet may be demounted and re-erected elsewhere to keep pace with expansion programs. 2. Q-Panels are light in weight, thus reducing the cost of framing and foundations. 3. Q-Panels have high insulation value . . . superior to a 12″ masonry wall. 4. Q-Panels are quickly installed because they are hung, not piled up. An acre of wall has been hung in 3 days. For more good reasons for using Q-Panel construction, use the coupon below and write for literature.



Robertson

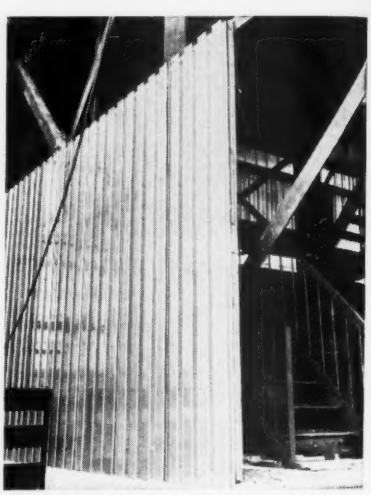
Q-Panels

H. H. Robertson Company

2400 FARMERS BANK BLDG. • PITTSBURGH 22, PA.

Offices in Principal Cities

Q-Panel walls grace the new Elrama Power Plant (above) near Pittsburgh. It was designed by Duquesne Light Company's Engineering and Construction Department. The Dravo Corporation was General Contractor.



Q-Panel walls (above) go up quickly in any weather because they are dry and hung in place, not piled up.

More than 32,000 sq. ft. of Q-Panels were used to enclose the impressive Hawthorn Steam Electric Station (left) of the Kansas City, Missouri, Power and Light Company. Ebasco Services, Inc., designed and built the plant.

Please send a free copy of your Q-Panel Catalog.

NAME

FIRM

ADDRESS

PUF1

Take a good look at the . . .

The vast Utah, Idaho, Wyoming and Colorado area served by the Utah Power & Light Company is truly a "Treasure Chest" in the Growing West. To industry it offers tremendous opportunity, for all the necessary elements are present, including:

- **Every major basic raw chemical.**
- **60% of USA phosphate reserves.**
- **214 different minerals.**
- **One-third of nation's copper.**
- **Largest proved uranium reserves in nation.**
- **Greatest concentration of non-ferrous metal mills, smelters, refineries in USA.**
- **Largest steel mill west of Mississippi.**
- **Low-cost power, water, fuel.**
- **Intelligent and stable labor force.**
- **Sound diversified economy.**
- **Healthful climate with low humidity.**
- **A gateway to the rich, far west market where America is growing fastest.**
- **Plus . . . plenty of "elbow room."**

Write, wire or telephone for AREA RESOURCES BROCHURE "A Treasure Chest in the Growing West." Inquiries held in strict confidence.

Address: W. A. Huckins, Manager, Business Development Department. Dept. 23. Utah Power & Light Co., Salt Lake City 10, Utah.

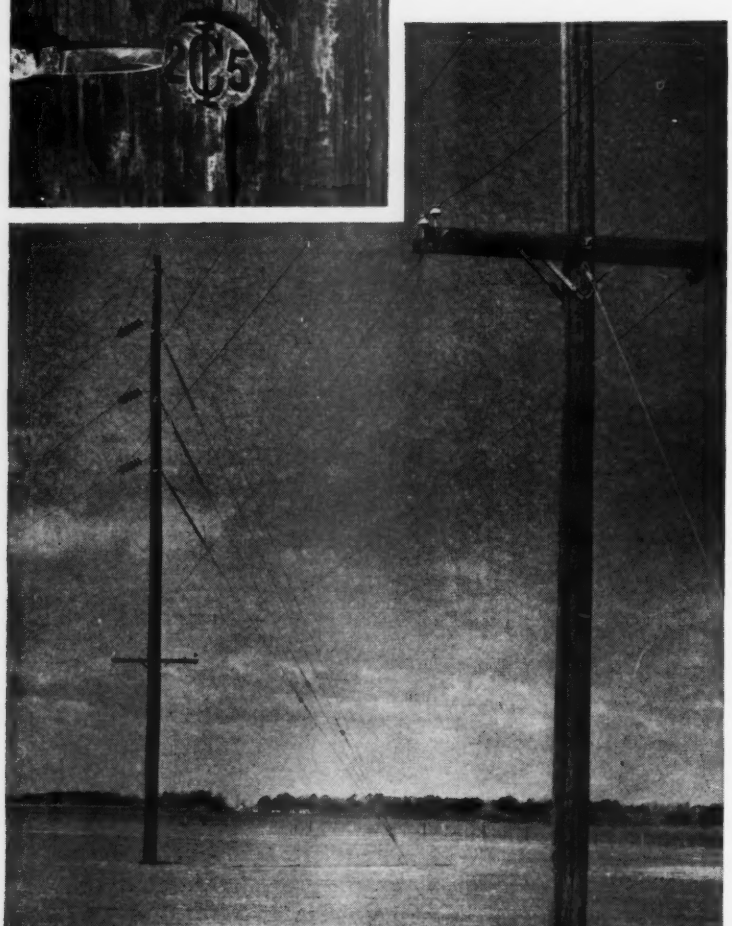
UTAH POWER & LIGHT CO.

A Growing Company in a Growing West

Here's Proof of Performance...

Gulf States Utilities counts on over 30 years of service from *pressure-creosoted* poles

• One of the many poles marked with a 1925 dating nail, denoting 30 years of service.



Gulf States Utilities Company, serving 291 communities in southeastern Texas and south central Louisiana, uses pressure-creosoted poles exclusively in more than 10,000 miles of transmission and distribution lines.

"It would be foolish to think of putting an untreated pole in the wet, termite-infested soil of the Gulf Coast area," says John Jordan, operating supervisor. "We have come to expect over 30 years of service from a pressure-creosoted pole."

Gulf States used pressure-creosoted poles in its first inter-city line installed in 1917. Some of these poles are still in use today after removal to other locations.

"First cost of a pole is reason enough to take advantage of Creosote's ability to make poles last," says Mr. Jordan. "But a replacement is even more expensive when you consider it takes 50 to 60 man-hours to make a pole change."

With poles pressure-creosoted for adequate life, neither the utility nor its linemen have cleanliness complaints.

For best performance, from the standpoints of service and cleanliness, specify poles treated with the top-quality preservative—USS Creosote. For more information, contact our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

You can obtain clean pressure-creosoted poles upon specification and with proper inspection without sacrificing pole service life.

SEE THE UNITED STATES STEEL HOUR. A full-hour TV program presented every other week by United States Steel. Consult local newspaper for time and station.

USS CREOSOTE

UNITED STATES STEEL

"UPSTATE, N. Y."

Buffalo, a great port and manufacturing center, is one of the large cities served by Niagara Mohawk

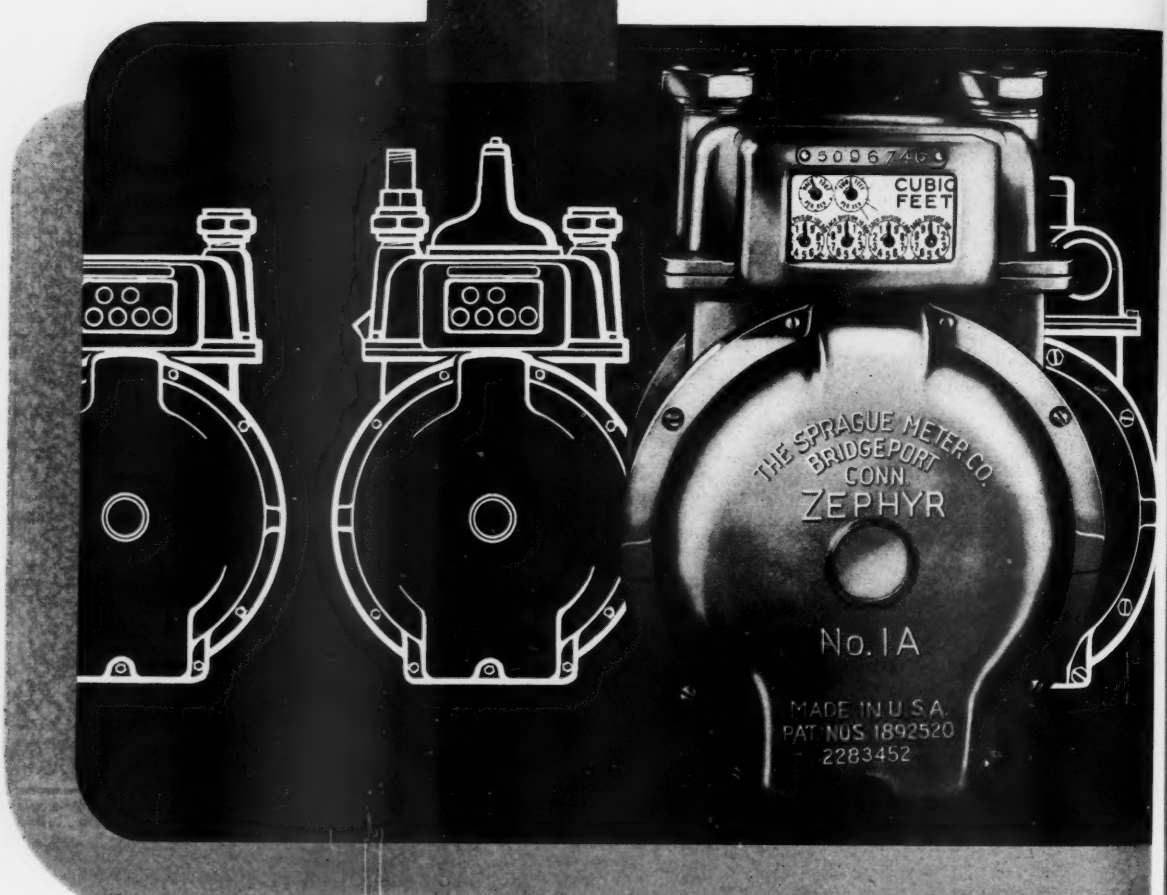
THE 22,000 square miles served by the Niagara Mohawk System literally has everything essential for continued growth and progress. The region includes large cities and world-famous industries, but it is also a land of many small communities and thousands of prosperous business enterprises. In itself the area is a great market of over three million people, yet also ranks high in farming, forest products, and mining.

Few other places in the nation can match this exceptional diversity. It gives upstate New York an economic balance that makes for sound and steady growth. Added to all these, it has another essential for progress and prosperity — ample supplies of low-cost electric power. Plenty of power for more homes, factories, and farms will always be available along the lines of the Niagara Mohawk System.

powered by Niagara Mohawk

Sprague gas meters

FOR DOMESTIC AND INDUSTRIAL GAS MEASUREMENT AND CONTROL . . .

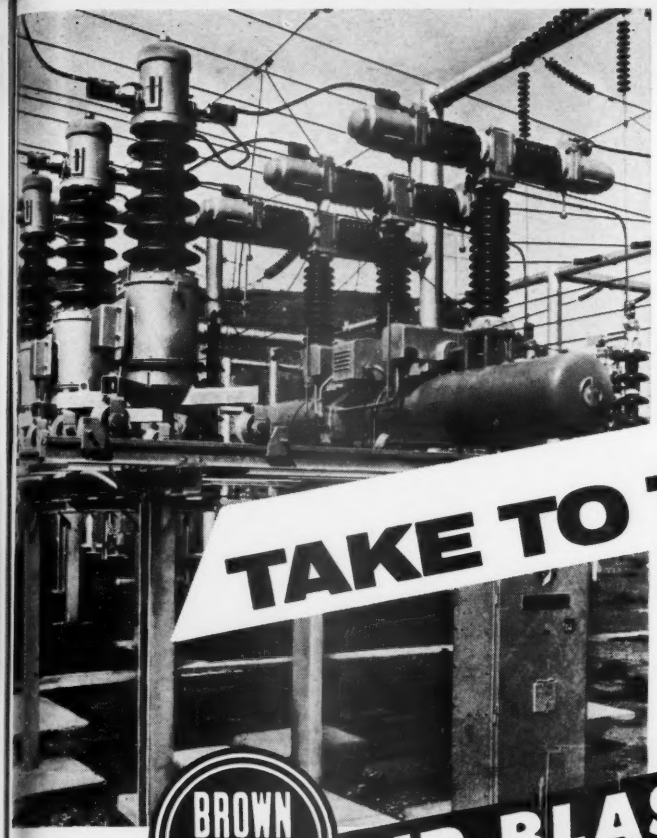


The services of the Sprague Engineering Staff are at your disposal at any time.

THE Sprague METER COMPANY

BRIDGEPORT, CONN.

BRANCH OFFICES IN HOUSTON, TEXAS, DAVENPORT, IOWA, LOS ANGELES AND SAN FRANCISCO, CALIFORNIA



TAKE TO THE AIR

BROWN BOVERI

AIR BLAST BREAKERS

up to 330 kV

MORE and more utilities, cooperatives, government agencies and industrials are *taking to air* for dependable, trouble-free, breaker protection for their circuits.

And, Brown Boveri Air Blast Breakers provide thoroughly reliable high speed operation because they are today's most advanced engineering application of good circuit breaker design. Starting with low inertia AIR *(in contrast to Oil)* controlled by a few, light, moving parts, the interrupting medium is brought between the contacts *faster* and *more efficiently* in a Brown Boveri Air Blast Breaker than in an oil breaker.

Only Brown Boveri Air Blast Breakers can possibly give you ALL these advantages:

1—High Interrupting Capacity
2—High Current Carrying Capacity
3—High Speed
4—Rapid Reclosing
5—Positive Interruption under All Conditions
6—Proven Dependability
7—No Fire Hazards
8—Low Initial Cost
9—Low Installation Cost
10—Minimum Maintenance
11—Rapid and Easy Inspection

You can EXPECT MORE . . . and GET MORE . . . from a Brown Boveri Air Blast Breaker . . . Get the FACTS, *today!*

BROWN BOVERI

BROWN BOVERI CORPORATION

19 RECTOR STREET • NEW YORK 6, N. Y.

Atlanta Ga. • Birmingham Ala. • Boston, Mass. • Butte, Mont. • Chicago, Ill. • Cleveland, O. • Denver Colo. Detroit, Mich. • High Point, N.C. • Jacksonville, Fla. • Kansas City, Mo. • Knoxville, Tenn. • Lewiston, Me. • Los Angeles Cal. Minneapolis, Minn. • New Orleans, La. • New York, N. Y. • Portland, Ore. • San Francisco, Cal. • Seattle, Wash. • Tucson Ariz.

Once in a Blue Moon you'll need a new Power Plant

. . . then Pioneer Service & Engineering Co. with 53 years of experience in this specialized field, stands ready to help you with a complete service including preliminary plans, load studies and site selection, the design of the plant and arrangements for financing its cost.

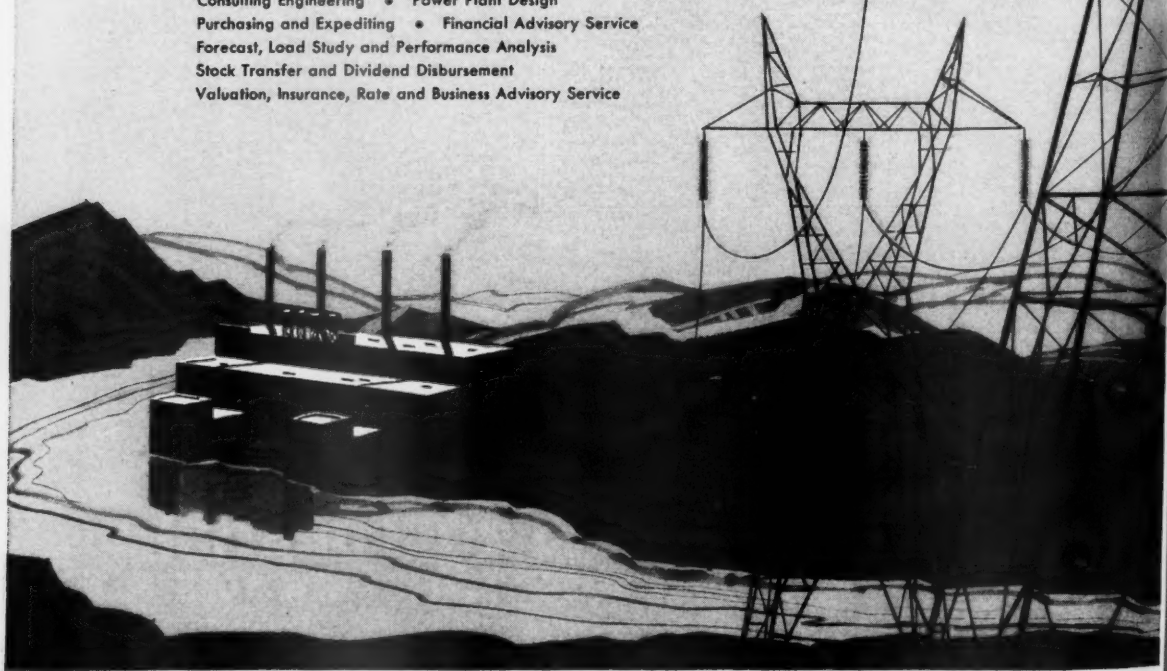
Our services and facilities are outlined in our booklet, "Pioneering New Horizons" yours for the asking.

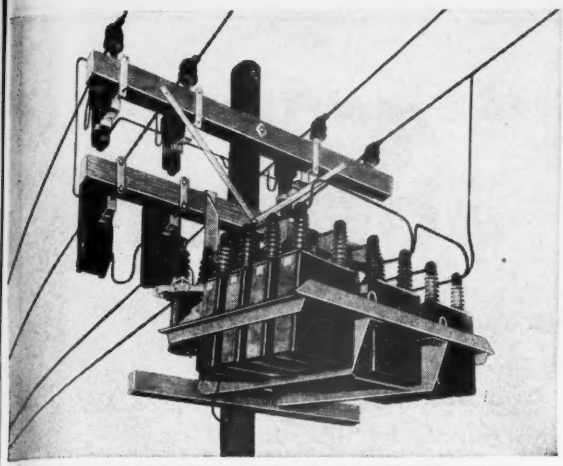
53 YEARS

Pioneer Service & Engineering Co.

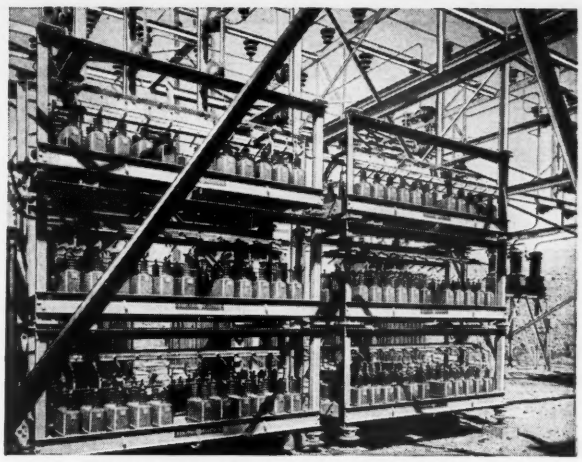
231 SOUTH LA SALLE STREET • CHICAGO 4, ILLINOIS

Consulting Engineering • Power Plant Design
Purchasing and Expediting • Financial Advisory Service
Forecast, Load Study and Performance Analysis
Stock Transfer and Dividend Disbursement
Valuation, Insurance, Rate and Business Advisory Service



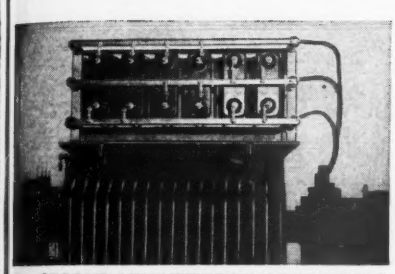


1. **AUTO-SWITCH CAPACITOR EQUIPMENT** quickly and easily installed requires minimum connections for energizing, and offers selection of either cross-arm or direct-to-pole mounting.

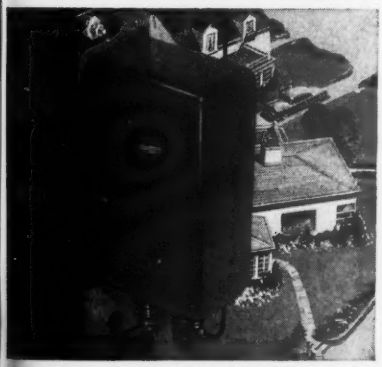


2. **STACK-RACK CAPACITOR EQUIPMENT** is factory-assembled and shipped as a unit, permitting faster, more flexible installation of bulk kilovars. It can be used on any distribution or transmission circuit.

4 ways to beat the problem of air conditioning loads—all with capacitors



3. **SECONDARY NETWORK CAPACITORS** for vault and subway use can operate in high ambients, require minimum space, are easy to mount, give low cost per kvar.



4. **RESIDENTIAL SECONDARY CAPACITORS,** both 3- and 5-kvar units, can be mounted in any position and have separate stud to simplify grounding connections.

During summer months, low power factor air conditioning loads create a serious problem for utilities—particularly those in warmer climates. The high kilovar content of these loads overburdens transformers, causes excessive voltage drop and high power losses. Here are 4 ways G-E Capacitors can help solve your summer load problem:

1. **AUTO-SWITCH CAPACITORS** for distribution feeders release the same thermal capacity as substation capacitors but provide up to ⅓ more loss reduction benefits and better system voltage regulation.

2. **STACK-RACK CAPACITORS** for bulk kilovar supply permit building block capacitor banks for all distribution and transmission voltage and kvar ratings. Preassembled stack racks reduce installation time and costs, are easy to move or add to. They are completely flexible to meet load growth and shifts in demand.

3. **SECONDARY NETWORK CAPACITORS** for cities, increase power factor near the network load, thus releasing needed capacity in expensive, thermally limited, network equipment; and increase voltage levels on the system . . . particularly important in case of feeder or equipment outage. These G-E capacitors are designed to meet the demands of high temperatures, limited space, and water conditions often found in network vaults.

4. **RESIDENTIAL SECONDARY CAPACITORS** for urban areas reduce losses, raise voltage levels and permit full utilization of transformer kw capability. They provide an effective, inexpensive means of offsetting decreasing residential power factor, especially in southern areas.

FOR MORE INFORMATION on how you can solve the problem of air conditioning loads with G-E Capacitors, contact your G-E Apparatus Sales Representative. *General Electric Company, Schenectady 5, N. Y.*

441-14

Progress Is Our Most Important Product

GENERAL ELECTRIC

Twofold Benefits From The

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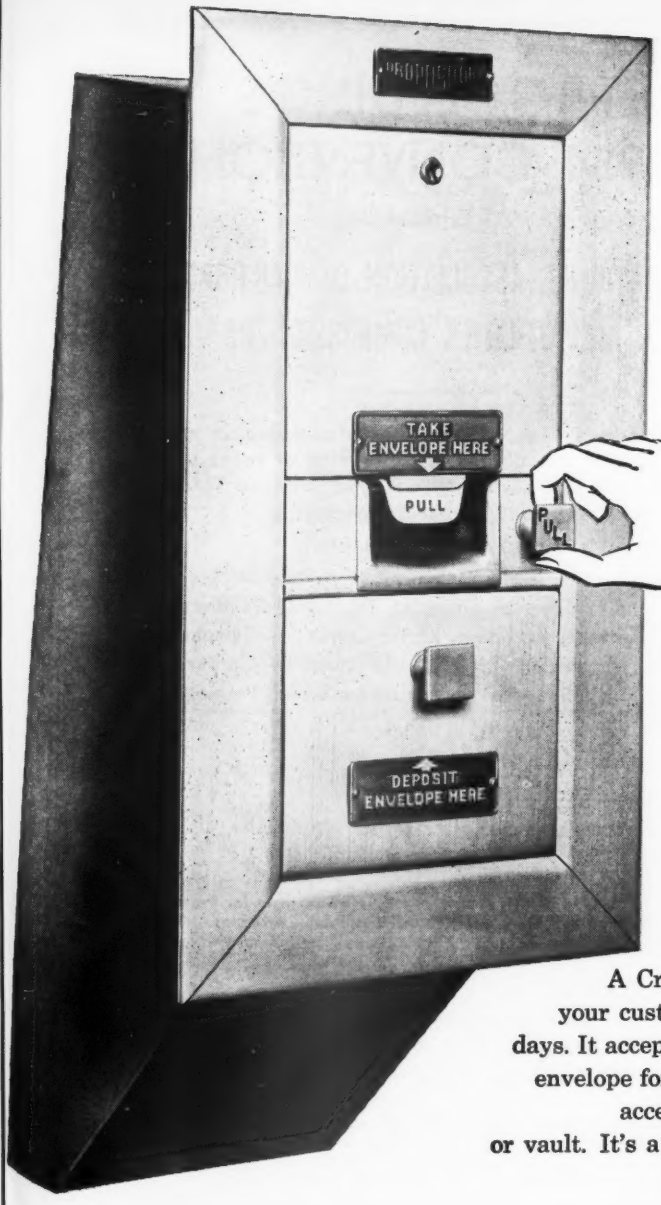

here is
round-the-clock
convenience
for your
customers

Cramer

DROPOSITORY

boosts collections,
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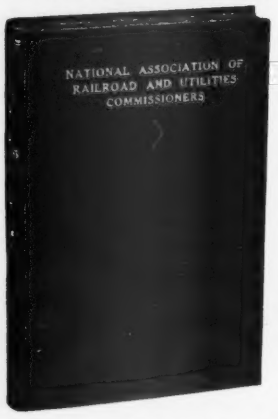

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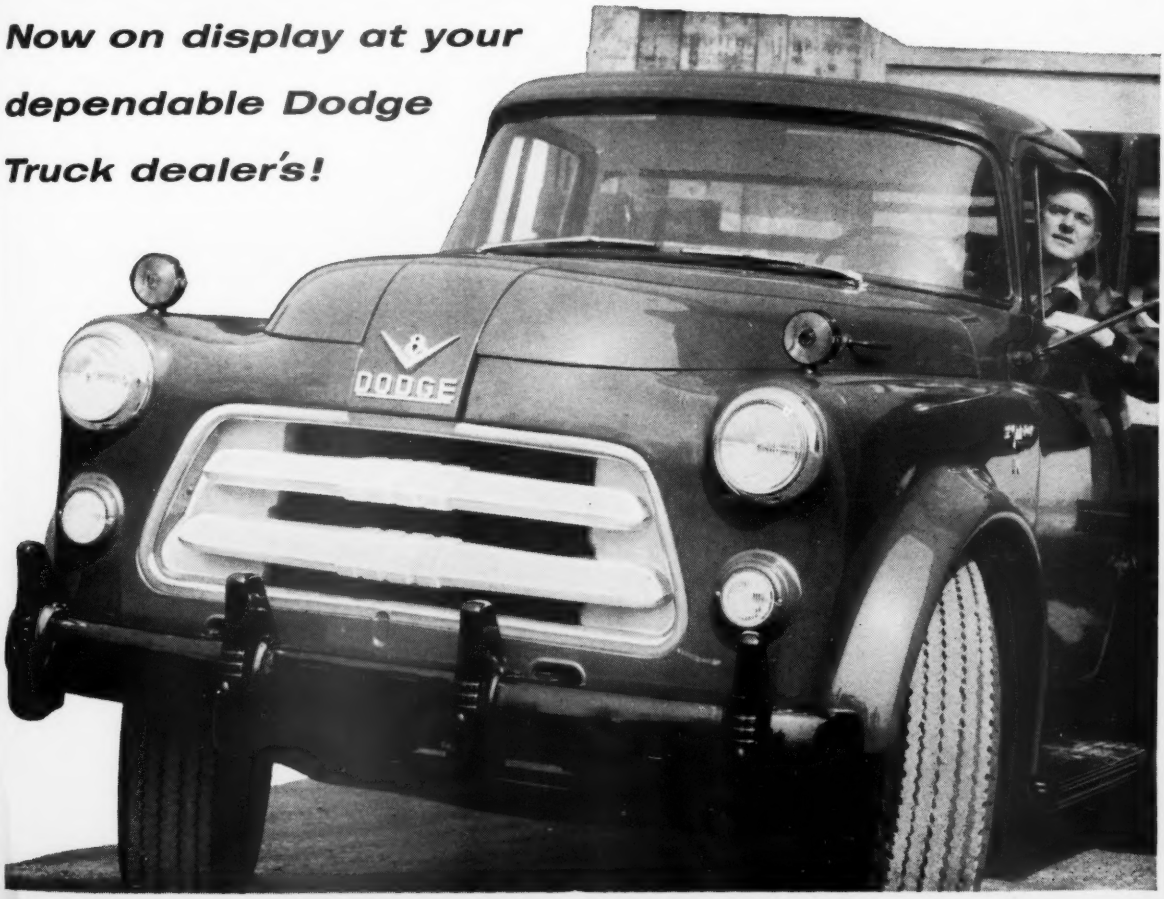

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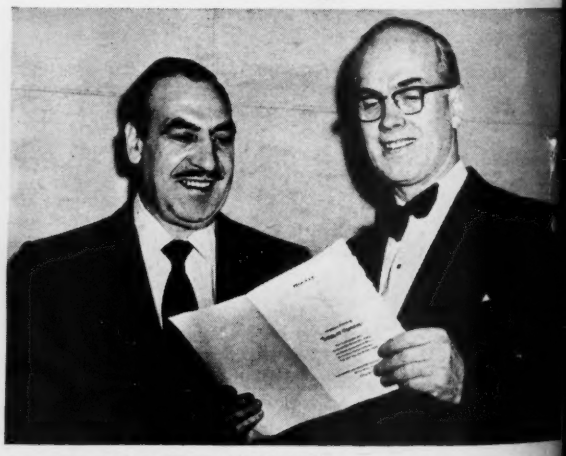

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